CONTENTS

TRADE NAME	MODEL	SET AND FOLDER No.
Brook	22A	265-2
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Cavalier	5R1	265-4
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General Electric	17T20, 21C103, 21C104, 21T22, 21T23, 21T24, 21T25 Tel. Rec.	265-6
Granco	MTU (UHF Conv.)	265-7
Mitchell	1278	265-8
RCA Victor	3-HES-5A (Ch. RS-146X) Prod. Chg. Bul. 114	265-1
RCA Victor	4-X-661 (Ch. RC1141)	265-9
RCA Victor	21-D-305, U, 21-D-317, U, 21-D-326, U, 21-D-327, U, 21-D-328, U, 21-D-329, U, 21-D-330, U, (Ch. KCS81, A, B) Tel. Rec. Prod. Chg. Bul. 114	265-1
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Truetone	2D2423A, 2D2424A, B, 2D2425A, 2D2426A Tel. Rec.	265-15
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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 8 IN SET 208

Ch. KCS81A

In later production of RCA Victor models 21-D-305, 21-D-317, 21-D-326, 21-D-327, 21-D-328, 21-D-329 and 21-D-350 , chassis KCS81A is used. Chassis KCS81A is identical to chassis KCS81, except the KRK22A tuner is used. A schematic of this tuner is given below. Alignment Instructions are given on the reverse side.

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Ch. KCS81, A, B

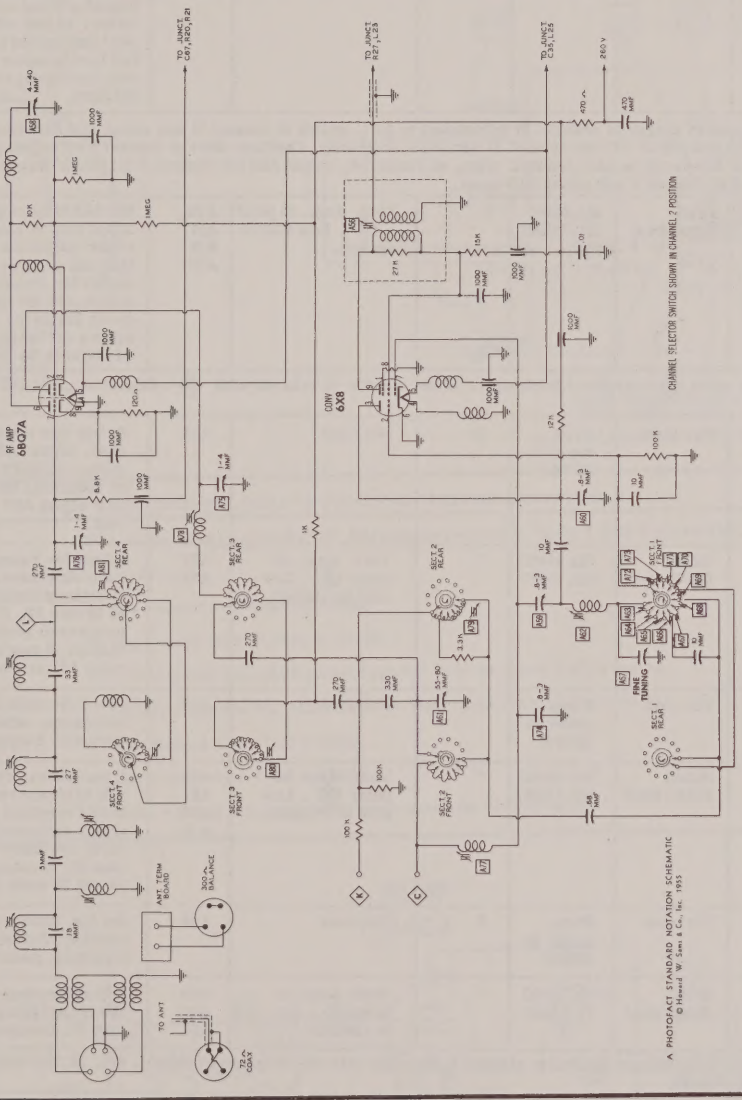
In later production of chassis KCS81, A, B the following production changes were made.

C1C and R119, connected from the red lead of T4 to ground, were omitted

R114, connected between the height control and 350V, was omitted.

L31, connected between the plate of V20 and terminal 2 of T3, was changed from 4.7 microhenries to 6.8 microhenries.

A 10Ω resistor was added from pin 6 (screen) of V7 to the junction of C36 and C51.



RCA VICTOR MODELS 21-D-305 (Ch. KCS81, A), 21-D-305U(Ch. KCS81B), 21-D-317(Ch. KCS81, A), 21-D-317U(Ch. KCS81B), 21-D-326 (Ch. KCS81, A), 21-D-326U(Ch. KCS81B), 21-D-327(Ch. KCS81, A), 21-D-327U(Ch. KCS81B), 21-D-328(Ch. KCS81, A), 21-D-328U(Ch. KCS81B), 21-D-329(Ch. KCS81, A), 21 -D-329U(Ch. KCS81B), 21-D-330(Ch. KCS81, A), 21-D-330U(Ch. KCS81B)

(Cont. on reverse side)

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KRK22A TUNER ALIGNMENT

An RF unit which is operative and requires only minor touch-up adjustments will require no presetting of adjustments. When complete alignment is necessary make the following pre-adjustments:

1. Preset A57 all the way out.
2. Set channels 7 to 13 oscillator slugs one turn from tight.
3. Adjust A56 so that the slug is all the way out.

Disconnect the link from terminals "A" and "B" of L15 and terminate the link with a 39Ω carbon resistor.
Tuner alignment as outlined below requires the use of a heterodyne frequency meter. The limits of the oscillator injection voltage are 2 volts minimum and 5.5volts maximum measured at point (K) with VTVM.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
49.	Direct	High side to point (L). Low side to chassis.	Not used	43.5MC (400~Mod)	2	Vert. Amp. to point (K). Low side to chassis.	A58	To be sure that 43.5MC trap is adjusted with zero bias, Short tuner AGC terminals to ground. Set scope gain to maximum. Adjust signal generator for maximum output. Adjust A58 for MINIMUM 400~ indication on scope. If necessary, A58 may be retouched in field to provide additional rejection at a specific frequency. Exercise care so that A58 is not tuned into channel 2 reducing that channel's sensitivity. Remove short from tuner AGC terminal to chassis.
50.		RF input of heterodyne frequency meter to end of insulated wire inserted in hole provided for adjustment of A60.	"	Set freq. meter to 227MC	8	Not used	A60 A57	Connect potentiometer arm of one of the bias supplies to the tuner AGC terminal. Connect positive lead to chassis. Adjust for -3 volts at tuner AGC terminal. Preset A59 for -3 volts on VTVM at point (K). Turn fine tuning control maximum clockwise. Adjust A60 for audible beat on frequency meter. Adjust A57 clockwise until beat note just begins to change, then turn one full turn in same clockwise direction. Return fine tuning control to its mid-range position.

NOTE: If channel 8 oscillator frequency cannot be reached by adjustment of A60, switch to channel 13 and adjust A62 for channel 13 oscillator frequency, then switch to channel 12 and adjust A63 for channel 12 oscillator frequency. Continue down to channel 8 adjusting proper oscillator trimmer to obtain proper oscillator frequency on each channel. Also, on channel 8, adjust A60 for channel 8 oscillator frequency. Switch to channel 13 and adjust A63, then switch back to channel 8 and adjust A60 again.

51.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	183MC (10MC Swp)	181.25MC 185.75MC	8	Vert. Amp. to point (K). Low side to chassis.	A74 A61 A75 A76	Set A56 fully counter clockwise. Set the scope gain to maximum and attenuate generator output for MINIMUM input signal that will produce usable pattern on scope. Adjust for response similar to Fig. 13. Adjust A76 for maximum amplitude between markers. A75 affects pass band. A74 affects tilt (when A76 is properly adjusted). A61 affects the response band width.
52.	Connect the DC probe of VTVM to point (K). Common to chassis. Adjust A58 for -3 volts at point (K). Repeat steps 51 and 52 until proper response is obtained.							
53.		Connect frequency meter as in step 50.	Not used	Freq. meter to 257MC	13	Not used	A62	Rotate fine tuning control maximum clockwise. Adjust A62 for audible beat on freq. meter. SLIGHTLY overshoot the adjustment an additional turn in the same direction, then adjust A57 to again obtain an audible beat.
54.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	"	Vert. Amp. to point (K). Low side to chassis.	A77 A78	Adjust for response similar to Fig. 13. Turn off generator and check oscillator injection voltage at point (K) using VTVM as in step 52. If A59 required readjustment, turn sweep generator back on and recheck channel 13 response. If necessary, retouch A77 and A78.
55.		Connect frequency meter as in step 50.	Not used	Freq. meter to 227MC	8	Not used	A57	Check for audible beat in freq. meter. If necessary, adjust A57 for proper oscillator frequency.
56.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	183MC (10MC Swp)	181.25MC 185.75MC	"	Vert. Amp. to point (K). Low side to chassis.	A74 A61 A75 A76	If necessary, retouch A74, A61, A75 and A76 to obtain response similar to Fig. 9. If A74 required adjustment turn off generator and switch back to channel 13 and check oscillator injection voltage as in step 52. If necessary, repeat steps 54, 55 and 56 until proper response is obtained.
57.		Connect frequency meter as in step 50.	Not used	Freq. meter to 129MC	6	Not used	A69	Set fine tuning control to its mid-range position. Adjust A69 for audible beat on frequency meter.
58.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	85MC (10MC Swp)	83.25MC 87.75MC	"	Vert. Amp. to point (K). Low side to chassis.	A79 A80 A81	Adjust for response curve similar to Fig. 13. Check oscillator injection voltage as in step 52. Readjust A59 if necessary.
59.	If A59 required adjustment, switch receiver and generator channel 8. Readjust A74 for response similar to Fig. 13. Recheck A57 and A60 for proper oscillator frequency as in step 50.							
60.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	85MC (10MC Swp)	83.25MC 87.75MC	6	Vert. Amp. to point (K). Low side to chassis.		Check for response similar to Fig. 13. Check oscillator injection voltage for each channel at point (K). If markers fall below 80% on any channel retouch A79, A80 and A81 to obtain response curves within proper limits.
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

(Cont. on next page)

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
61.	Two 130Ω Carbon Resistors	Across antenna terminals with 130Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. to point (K). Low side to chassis.		Check for response similar to Fig. 13. Check oscillator injection voltage for each channel at point (K). If markers fall below 80% on any channel, retouch A61, A74 and A81 to obtain response curves within proper limits.
			207MC (10MC Swp)	205.25MC 209.75MC	12			
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
62.		Connect frequency meter as in step 50.	Not used	257MC	13	Not used	A62	Adjust individual channel oscillator slug for audible beat on each channel. Recheck oscillator injection voltage on each channel at point (K) to verify that the voltage is within limits (2 volts minimum and 5.5 volts maximum.
				251MC	12		A63	
				245MC	11		A64	
				239MC	10		A65	
				233MC	9		A66	
				227MC	8		A67	
				221MC	7		A68	
				129MC	6		A69	
				123MC	5		A70	
				113MC	4		A71	
				107MC	3		A72	
				101MC	2		A73	

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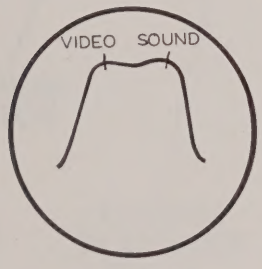
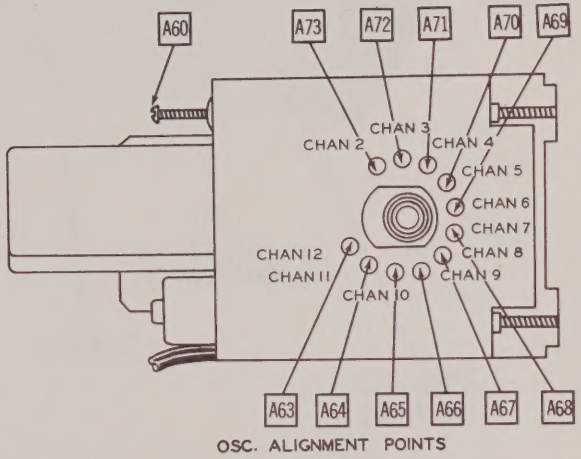


FIG. 13



OSC. ALIGNMENT POINTS

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 14 IN SET 251

Ch. RS-146X

RCA Victor Model 3-HES-5A (Ch. RS-146X) is identical to model 3-HES-5 (Ch.RS-146), except the pre-amp circuit was revised as follows:

R4 was changed from 68KΩ to 390KΩ.

R5 was changed from 2.2Meg to 470KΩ.

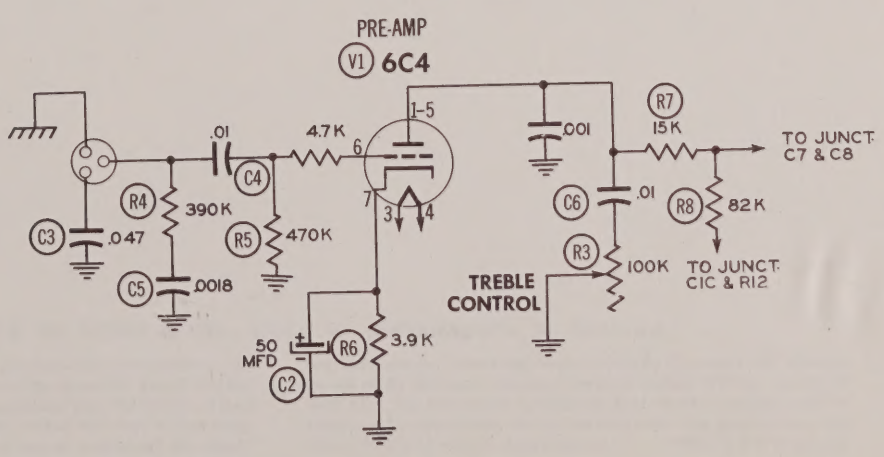
A 4.7KΩ resistor was added between pin 6 of V1 to the junction of C4 and R5.

A .001MFD capacitor was added from the plate (pin 1 and 5) of V1 to ground.

R7 was changed from 47KΩ to 15KΩ.

R8 was changed from 47KΩ to 82KΩ.

A partial schematic is given below which shows the revised circuit.



RETMA MEMBER
RADIO-ELECTRONICS-TELEVISION MANUFACTURERS ASSOCIATION

BROOK MODEL 22A

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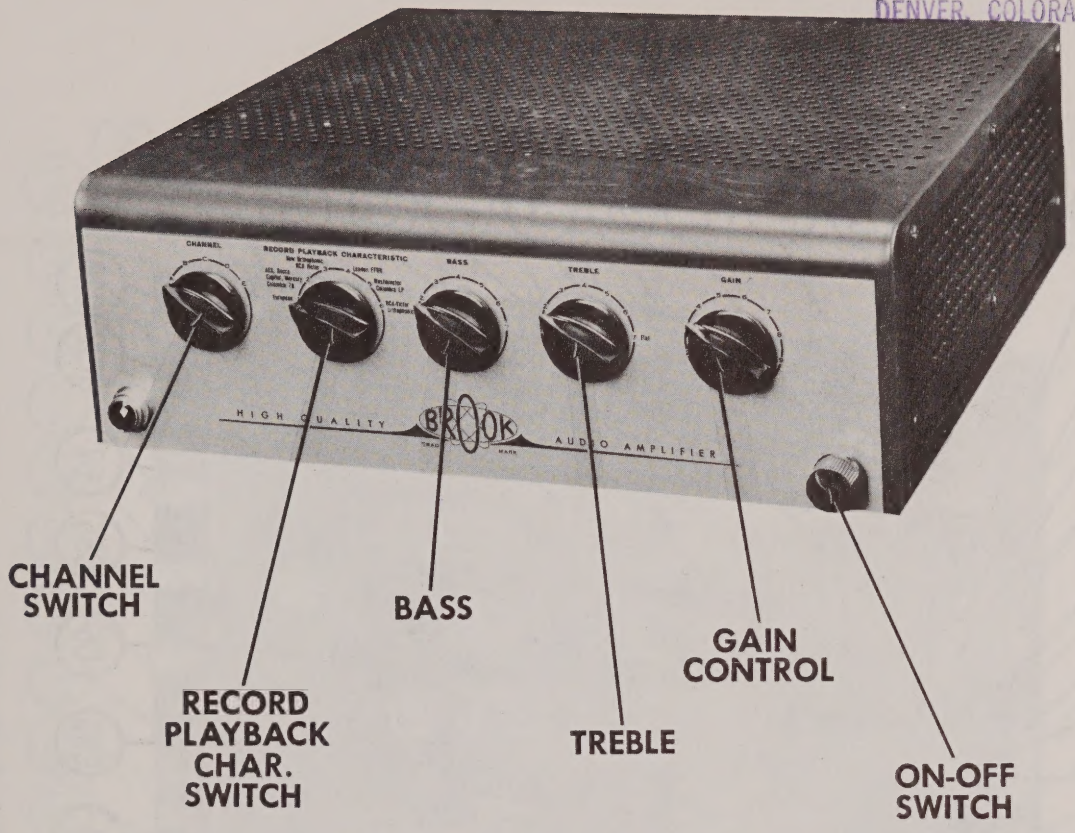

BROOK MODEL 22A

TRADE NAME	Brook Model 22A
MANUFACTURER	Brook Electronics, Inc., 34 DeHart Place., Elizabeth, N. J.
TYPE SET	AC Operated 5 Channel 10-15 Watt Audio Amplifier
TUBES (Nine)	Types 6SJ7 Pre-Amp. 6C4 Pre-Amp., 12AU7 AF Amp., 12AU7 AF Amp-Phase Inverter, (2) 6C4 Driver, (2) 2A3 Output, 5U4G Rectifier
POWER SUPPLY	110-120 Volts AC - 50/60 Cycles RATING .95 Amp. @ 117 Volts AC

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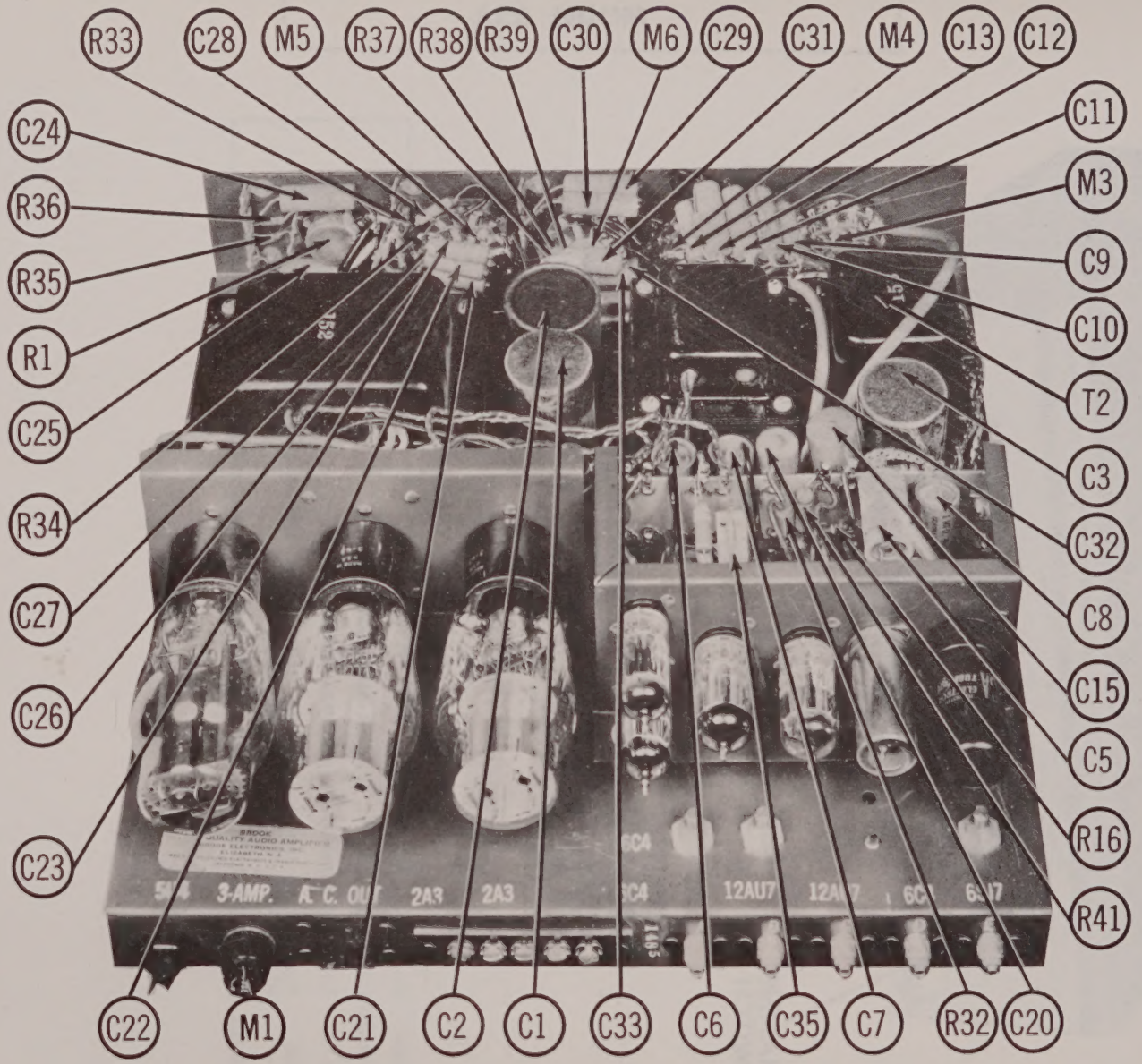
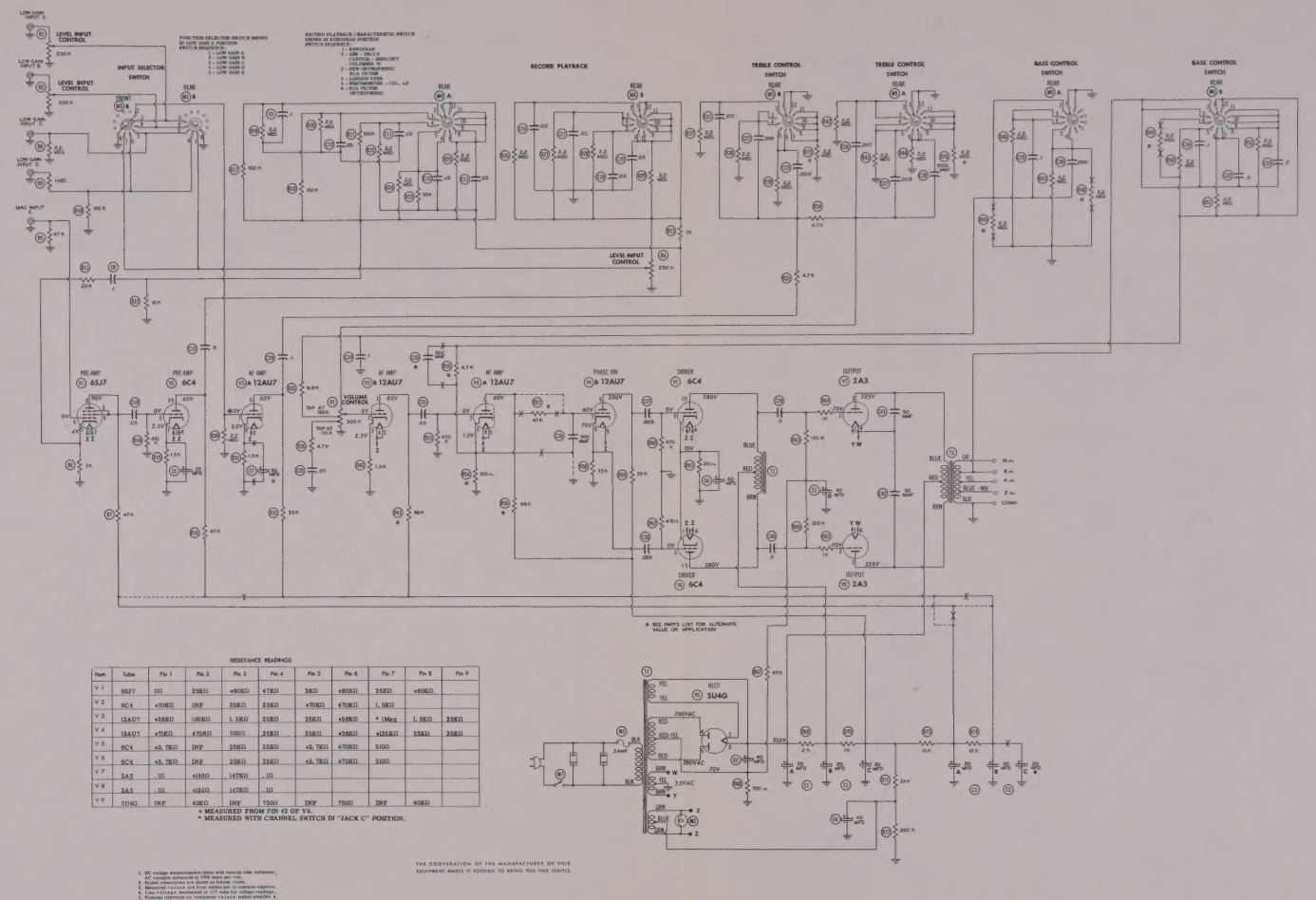


CHASSIS TOP VIEW



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6SJ7	0Ω	25KΩ	+60KΩ	47KΩ	3KΩ	+60KΩ	25KΩ	+60KΩ	
V 2	6C4	+70KΩ	INF	25KΩ	25KΩ	+70KΩ	470KΩ	1. 5KΩ		
V 3	12AU7	+56KΩ	100KΩ	1. 5KΩ	25KΩ	25KΩ	+56KΩ	* 1Meg	1. 5KΩ	25KΩ
V 4	12AU7	+75KΩ	470KΩ	500Ω	25KΩ	25KΩ	+56KΩ	+125KΩ	33KΩ	25KΩ
V 5	6C4	+3. 7KΩ	INF	25KΩ	25KΩ	+3. 7KΩ	470KΩ	510Ω		
V 6	6C4	+3. 7KΩ	INF	25KΩ	25KΩ	+3. 7KΩ	470KΩ	510Ω		
V 7	2A3	. 1Ω	+150Ω	147KΩ	. 1Ω					
V 8	2A3	. 1Ω	+150Ω	147KΩ	. 1Ω					
V 9	5U4G	INF	40KΩ	INF	750Ω	INF	750Ω	INF	40KΩ	

* MEASURED FROM PIN #2 OF V9.
* MEASURED WITH CHANNEL SWITCH IN "JACK C" POSITION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Line voltage adjusted for 117 volts for voltage readings.
4. Line voltage measured at 117 volts for voltage readings.
5. Nominal tolerance on resistors is ±10% unless marked with asterisk * variation of ± 5% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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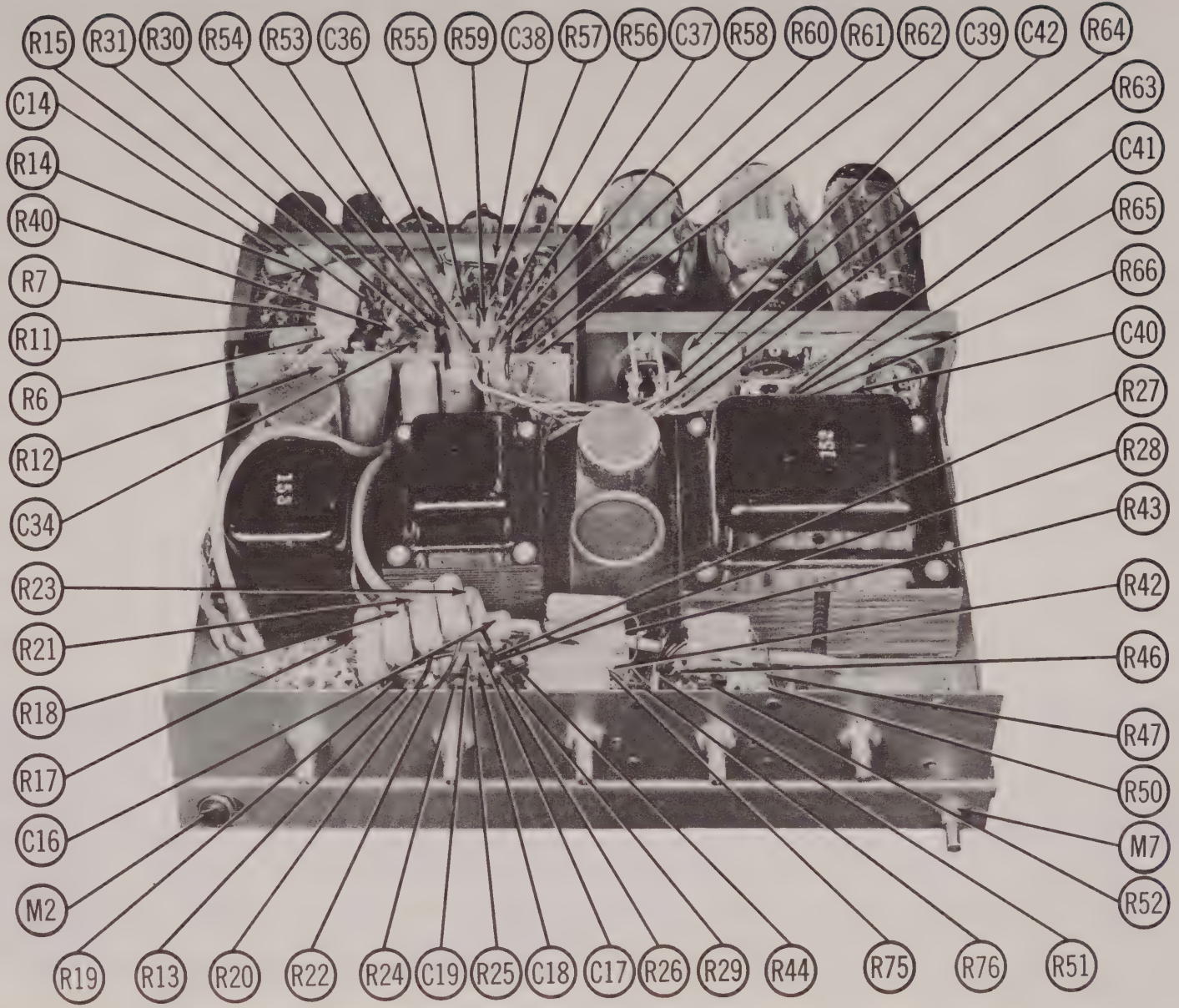
265-2



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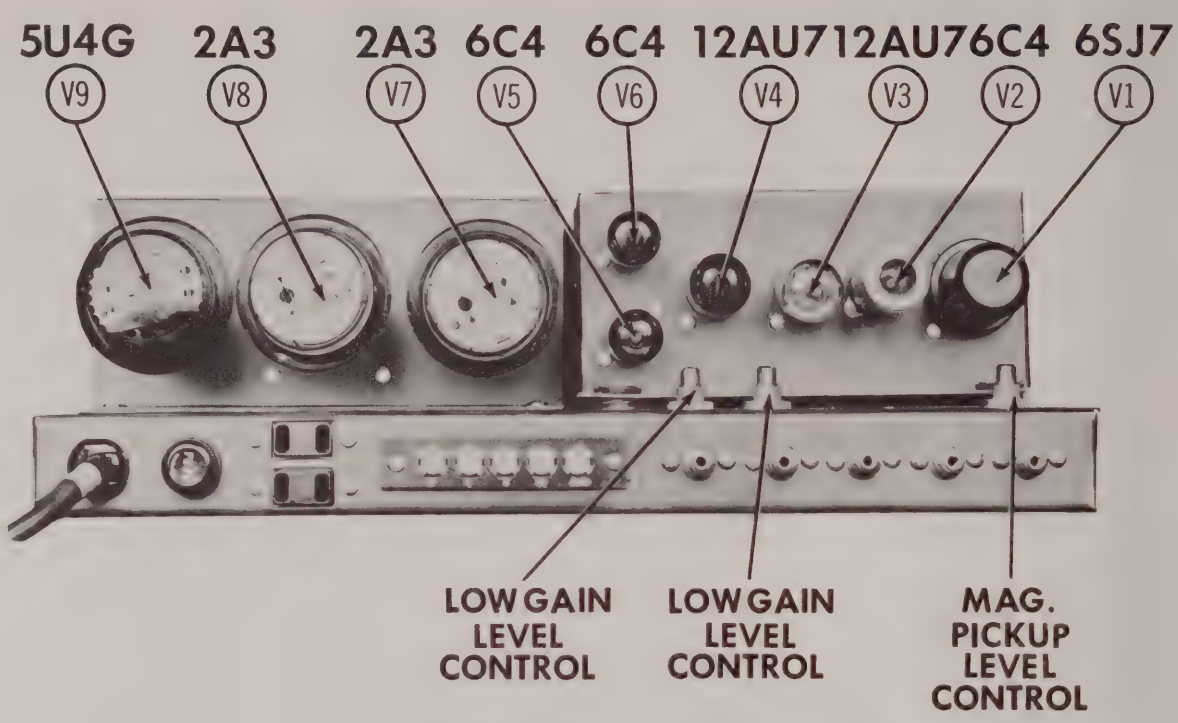
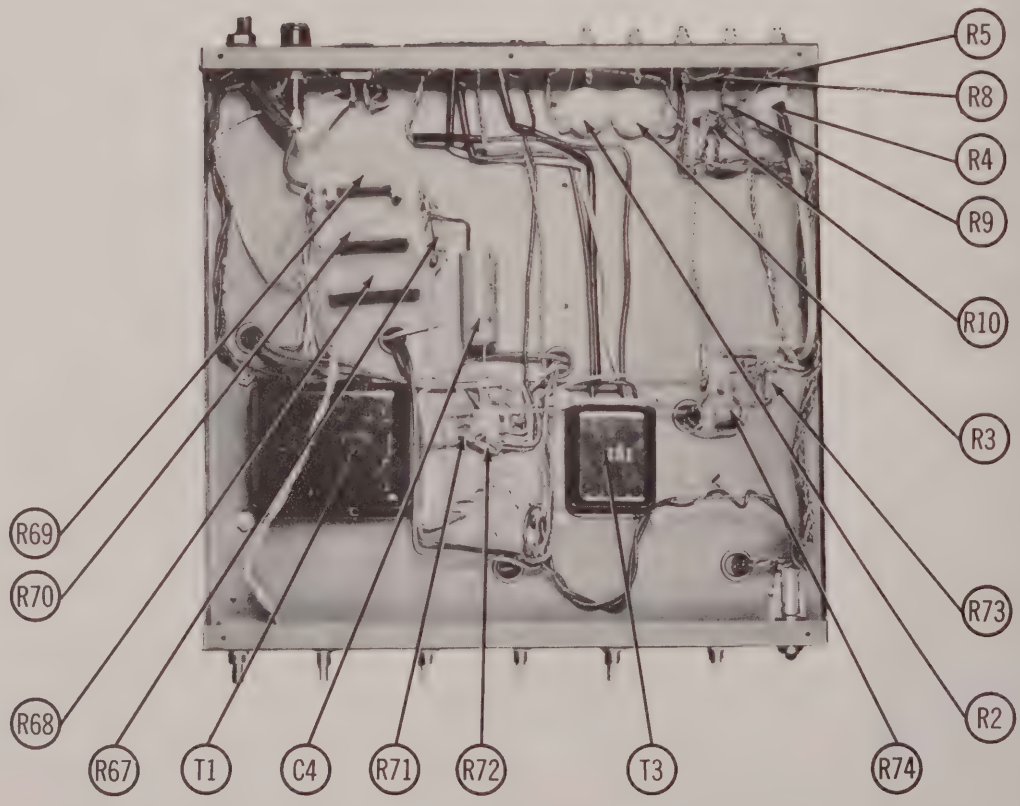


CHASSIS -REAR VIEW



CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		BROOK PART No.	STANDARD REPLACEMENT		
V1	Pre-Amp.	6SJ7	6SJ7	8N	
V2	Pre-Amp.	6C4	6C4	6BG	
V3	AF Amp.	12AU7	12AU7	9A	
V4	AF Amp. - Phase Inverter	12AU7	12AU7	9A	
V5	Driver	6C4	6C4	6BG	
V6	Driver	6C4	6C4	6BG	
V7	Output	2A3	2A3	4D	
V8	Output	2A3	2A3	4D	
V9	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	BROOK PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲20	475								
B	■20	475								
C	▲20	475								
D	40	50								
C2	40	450		AFH4-10		B042		FP434	TVL-1820	
C3A	■20	475								
B	▲20	475								
C	▲20	475								
D	40	50								
C4	40	150		PRS150/40		BR4015		TC48	TVA-1413	
C5	25	50		PRS50/25		BR255		TC36	TVA-1306	
C6	50	50		PRS50/50		BR505		TC39	TVA-1308	
C7	50	50		PRS50/50		BR505		TC39	TVA-1308	Note 1
C8	1	450		PRS450/4		BR145		TC70	R1260	
C9	.1	200								
C10	.03	600								
C11	.03	600								
C12	.03	600								
C13	.02	200								
C14	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C15	.5	400		P488-5		CUB4P5		PT405	4TM-P5	
C16	.012	200								
C17	.03	600								
C18	.02	200								
C19	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C20	.1	600		P688-1	DF-104	CUB4P1		PT401	4TM-P1	
C21	.015	200								
C22	.005	200		P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C23	.0015	200								
C24	.1	200								
C25	.05	400								
C26	.007	200								
C27	.003	200								
C28	1000	500		1468-001		5W5D1		MCB251	MS-21	
C29	.1	200								
C30	.036	200								
C31	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C32	.5	200		P288-5		PJ2P5		PT405	2TM-P5	
C33	.2	200		P288-2		PJ2P2		PT402	2TM-P2	
C34	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C35	500	500		1468-0005		5W5T5		MCB245	MS-35	Note 1
C36	500	500		1468-0005		5W5T5		MCB245	MS-35	
C37	.005	600		P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C38	.005	600		P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C39	.5	400		P488-5		CUB4P5		PT405	4TM-P5	
C40	.5	400		P488-5		CUB4P5		PT405	4TM-P5	
C41	50	500		1468-00005		5W5Q5		MCB225	MS-45	
C42	50	500		1468-00005		5W5Q5		MCB225	MS-45	

Note 1: Not used in all models.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BROOK PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1	300KΩ	½	6153638					Volume tapped at 160K & 110K
R2A	250KΩ	½	BA011-1099	Q13-130	A47-250K-Z	AB-51	U-44	Level
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R2A
R3A	250KΩ	½	BA011-1099	Q13-130	A47-250K-Z	AB-51	U-44	Level
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R3A
R4A	250KΩ	½	BA011-1099	Q13-130	A47-250K-Z	AB-51	U-44	Level
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R4A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	BROOK PART No.	IRC PART No.	
R5	47KΩ	1		BTA-47K	
R6	3000Ω 5%	1			
R7	47KΩ	1		BTA-47K	
R8	2.2Meg	½		BTS-2.2Meg	
R9	1Meg	½		BTS-1Meg	
R10	100KΩ	½		BTS-100K	
R11	22KΩ	½		BTS-22K	
R12	10KΩ	1		BTA-10K	
R13	1000Ω	½		BTS-1000	
R14	470KΩ	½		BTS-470K	
R15	1500Ω	1		BTA-1500	
R16	47KΩ	1		BTA-47K	
R17	100KΩ	½		BTS-100K	
R18	150KΩ	½		BTS-150K	
R19	2.2Meg	½		BTS-2.2Meg	
R20	2.2Meg	½		BTS-2.2Meg	
R21	100KΩ	½		BTS-100K	
R22	2.2Meg	½		BTS-2.2Meg	
R23	33KΩ	½		BTS-33K	
R24	2.2Meg	½		BTS-2.2Meg	
R25	2.2Meg	½		BTS-2.2Meg	
R26	2.2Meg	½		BTS-2.2Meg	
R27	2.2Meg	½		BTS-2.2Meg	
R28	2.2Meg	½		BTS-2.2Meg	
R29	2.2Meg	½		BTS-2.2Meg	
R30	2.2Meg	½		BTS-2.2Meg	
R31	1500Ω	1		BTA-1500	
R32	33KΩ	½		BTS-33K	
R33	4700Ω	½		BTS-4700	
R34	4700Ω	½		BTS-4700	
R35	6800Ω	½		BTS-6800	
R36	4700Ω	½		BTS-4700	
R37	2.2Meg	½		BTS-2.2Meg	
R38	2.2Meg	½		BTS-2.2Meg	
R39	2.2Meg	½		BTS-2.2Meg	
R40	1500Ω	1		BTA-1500	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	BROOK PART No.	IRC PART No.	
R41	68KΩ	1		BTA-68K	Note 5
R42	2.2Meg	½		BTS-2.2Meg	
R43	2.2Meg	½		BTS-2.2Meg	
R44	2.2Meg	½		BTS-2.2Meg	
R45	2.2Meg	½		BTS-2.2Meg	Note 4
R46	2.2Meg	½		BTS-2.2Meg	
R47	2.2Meg	½		BTS-2.2Meg	
R48	2.2Meg	½		BTS-2.2Meg	Note 4
R49	2.2Meg	½		BTS-2.2Meg	Note 4
R50	2.2Meg	½		BTS-2.2Meg	
R51	2.2Meg	½		BTS-2.2Meg	
R52	2.2Meg	½		BTS-2.2Meg	
R53	470KΩ	½		BTS-470K	
R54	510Ω 5%	1		BTA-510 5%	Note 1
R55	4700Ω	½		BTS-4700	Note 2
R56	68KΩ	1		BTA-68K	Note 3
R57	47KΩ	½		BTS-47K	Note 4
R58	33KΩ	1		BTA-33K	
R59	33KΩ	1		BTA-33K	
R60	470KΩ	½		BTS-470K	
R61	510Ω 5%	1		BTA-510 5%	
R62	470KΩ	½		BTS-470K	
R63	100KΩ	½		BTS-100K	
R64	1000Ω	½		BTS-1000	
R65	1000Ω	½		BTS-1000	
R66	100KΩ	½		BTS-100K	
R67	47KΩ	1		BTA-47K	
R68	700Ω	20			
R69	2000Ω	10			
R70	1000Ω	10			
R71	33KΩ	½		BTS-33K	
R72	220KΩ	½		BTS-220K	
R73	10KΩ	1		BTA-10K	
R74	10KΩ	1		BTA-10K	
R75	2.2Meg	½		BTS-2.2Meg	Note 4
R76	2.2Meg	½		BTS-2.2Meg	Note 4

Note 1: Some models may use a 470Ω resistor in this application.
Note 2: Some models may use a 3300Ω resistor in this application.
Note 3: Some models may use a 47KΩ resistor in this application.
Note 4: Not used in all models.
Note 5: Some models may use a 33KΩ resistor in this application.

PHILCO CORP.
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TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	BROOK PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ .95A	710VCT .114ADC	5VAC @ 3A	2.5VCT @ 2.5A						
				SEC.4						
				6.3VCT @ 1.34						

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	BROOK PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T2	3.54KΩCT .010ADC									

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	BROOK PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T3	3.1KΩ	16ΩTap ⓐ 8Ω ⓐ 4Ω ⓐ 2Ω							

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BROOK PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3A 250V			312003 (3AG-3A)	342001	AGC-3	HKP

MISCELLANEOUS

ITEM No.	PART NAME	BROOK PART No.	NOTES
M2	Dial Light		Bayonet, #47
M3	Switch		Selector
M4	Switch		Record Playback Characteristic Control
M5	Switch		Treble Control
M6	Switch		Bass Control
M7	Switch		Power On/Off

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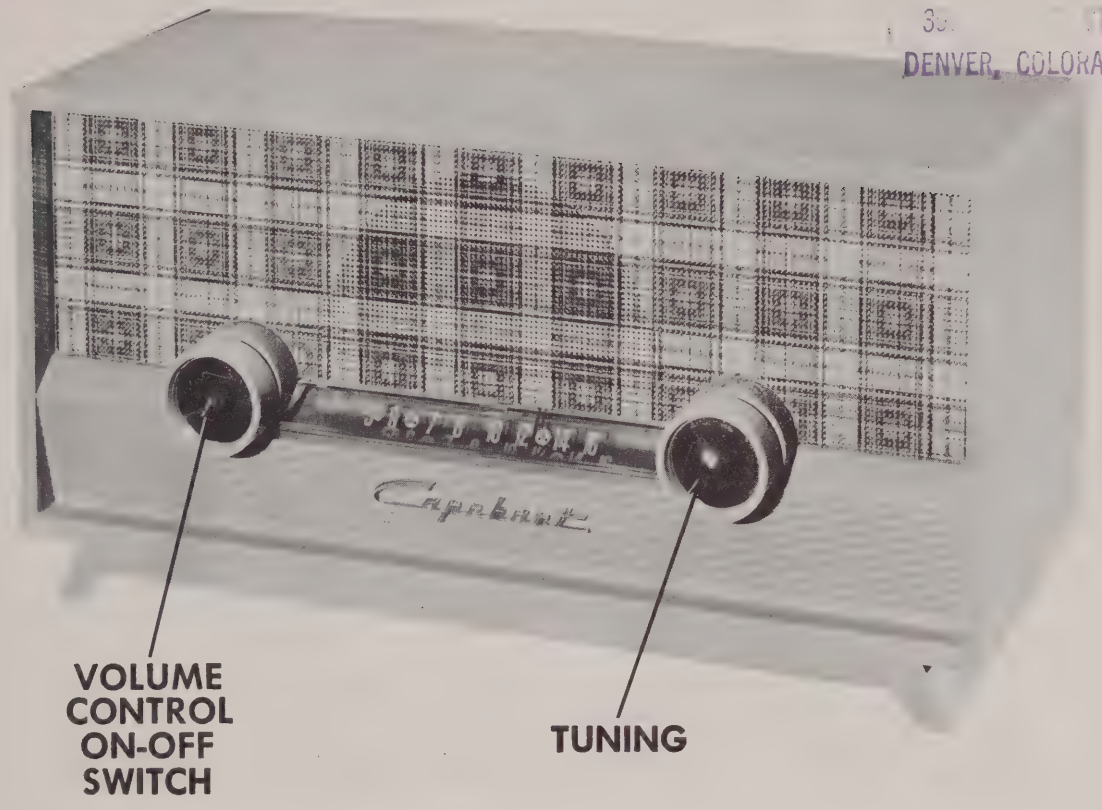
DENVER, COLORADO



CAPEHART
MODEL T-54

TRADE NAME	Capehart Model T-54
MANUFACTURER	Capehart-Farnsworth Co., Div. of I.T. & T. Corp., Fort Wayne 1, Ind.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det-AVC-AF Amp., 50L6GT Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-DC RATING .24 Amp. @ 117 Volts AC
TUNING RANGE--BROADCAST	540 - 1620 KC

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1MFD	High side to antenna stator lug on tuning gang. Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver.
3		"	600KC	Tune to 600KC signal.	"	A6	Adjust for maximum output. Repeat step 2.
4		"	1400KC	Tune to 1400KC signal.	"	A7	Adjust for maximum output.
5		"	600KC	Tune to 600KC signal.	"		If necessary, bend slotted antenna rotor plates for maximum output. Repeat step 4.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		CAPEHART PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	12SQ7GT used in some versions.
V4	Output	50L6GT	50L6GT	7S	
V5	Rectifier	35Z5	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CAPEHART PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	50	150		PRS150/50-50		BBRD5515		TCD49	TVA-2453	
B	50	150								
C2	470			SI470	D6-471	TP46	GP1K-471	UC-5347	5GA-T47	
C3	56			SI56	D6-560	TP31	GP1K-560	UC-5456	5GA-Q46	
C4	.047	200		P288-047	DF-503	PJ2S47		PT4147	2TM-S47	
C5	150			SI150	D6-151	TP36	GP1K-151	UC-5315	5GA-T15	
C6A	220									
B	2000									
C	5000			♦PA-113-1	♦PC-150	♦116TM1	♦1408-D1		♦DT-1	
D	250									
E										
C7	.01	600		P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C8	.022	600		689ZX-02		CUB6S22		PT6122	6TM-S22	
C9	.1	600		P688-1	DF-104	CUB6P1		PT601	6TM-P1	

♦ Items C6A, C6B, C6C, C6D, C6E, R6A, R6B and R6C are combined in one unit.
When replacing items individually, items C6D and C6E total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CAPEHART PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	750276A-6	Q13-133	A47-500K-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R1A

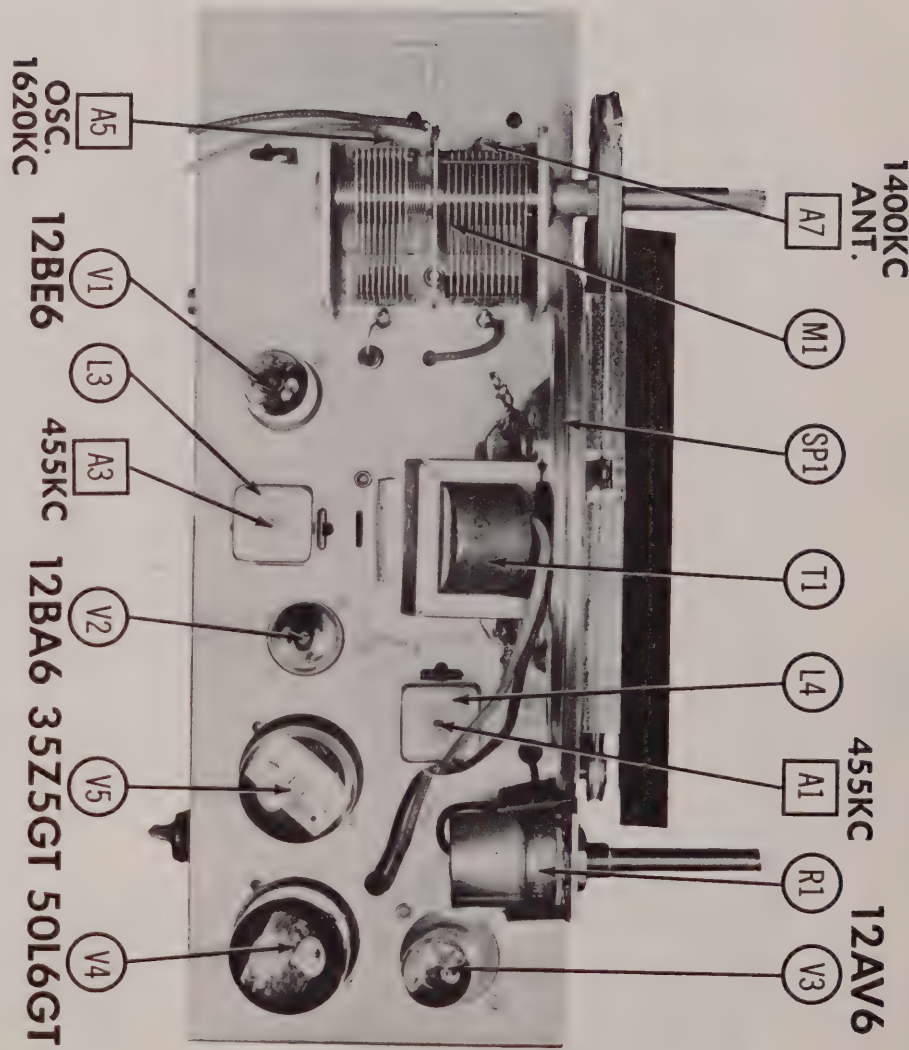
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CAPEHART PART No.	IRC PART No.	
R2	22KΩ	½		BTS-22K	
R3	1Meg	½		BTS-1Meg	
R4	47Ω	½		BTS-47	
R5	3.3Meg	½		BTS-3.3Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CAPEHART PART No.	IRC PART No.	
R6A	6.8Meg	½	♦	BTS-6.8Meg	
B	470KΩ	½		BTS-470K	
C	470KΩ	½		BTS-470K	
R7	150Ω	½		BTS-150	
R8	1500Ω	1		BTA-1500	
R9	220KΩ	½		BTS-220K	

♦ Items R6A, R6B, R6C, C6A, C6B, C6C, C6D and C6E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CAPEHART PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.4KΩ	3.2Ω	Part of speaker	A-3332	A-3025	S-12X	Z1101	24S50 ①	① Drill one new mounting hole.

SPEAKER

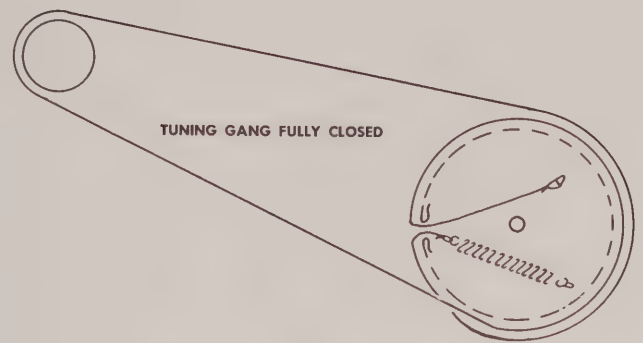
ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CAPEHART PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.2Ω	750220B-4	ST-105 Mod. P5-X	5A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CAPEHART PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.8Ω						Includes cabinet back.
L2	Osc. Coil	.5Ω	4.8Ω		14-1074	BC-381	70-Osc.	
L3	Input IF	14Ω	14Ω	452243A-2	16-6758	BC-352	12-C1	
L4	Output IF	14Ω	14Ω	452243A-2	16-6758	BC-353	12-C2	

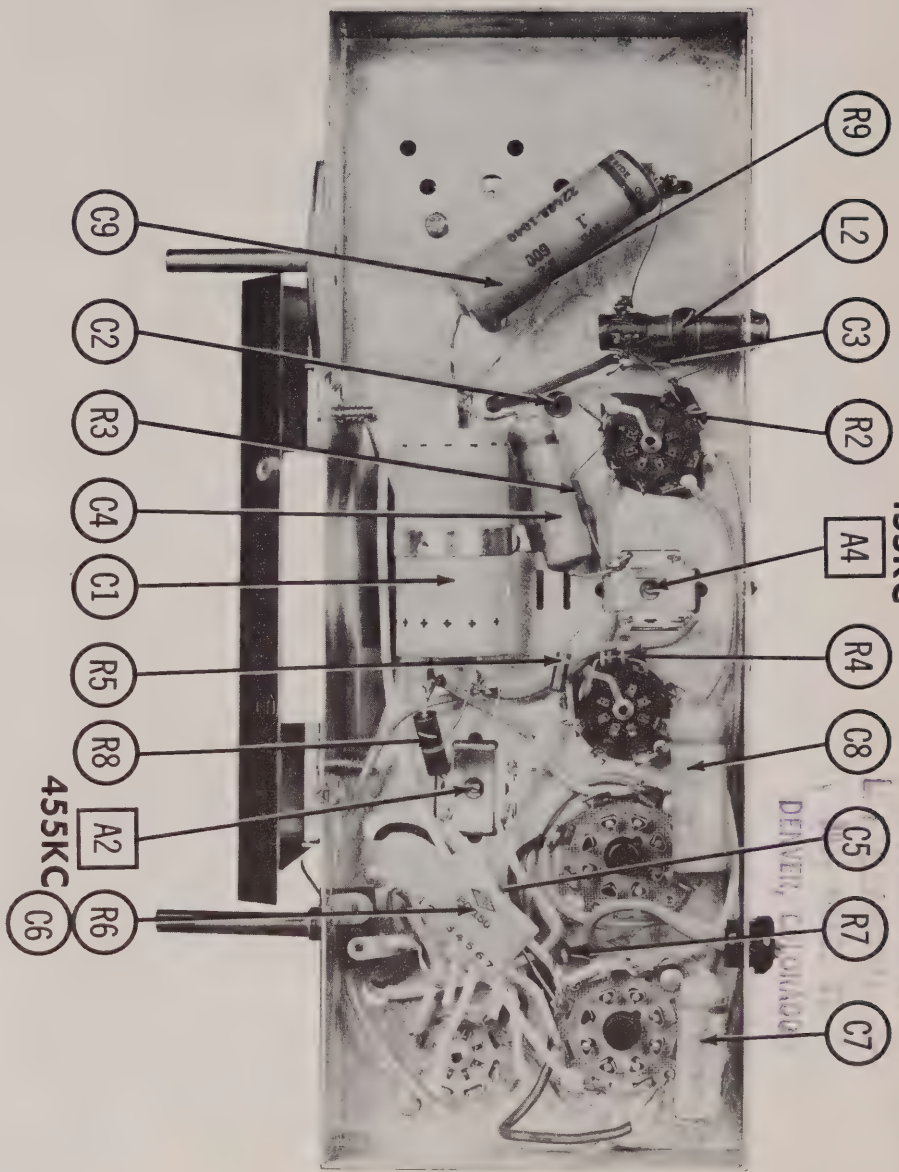
MISCELLANEOUS

ITEM No.	PART NAME	CAPEHART PART No.	NOTES
M1	Tuning Cap.	650792B-1-110	19-287MMF; 23-168MMF.

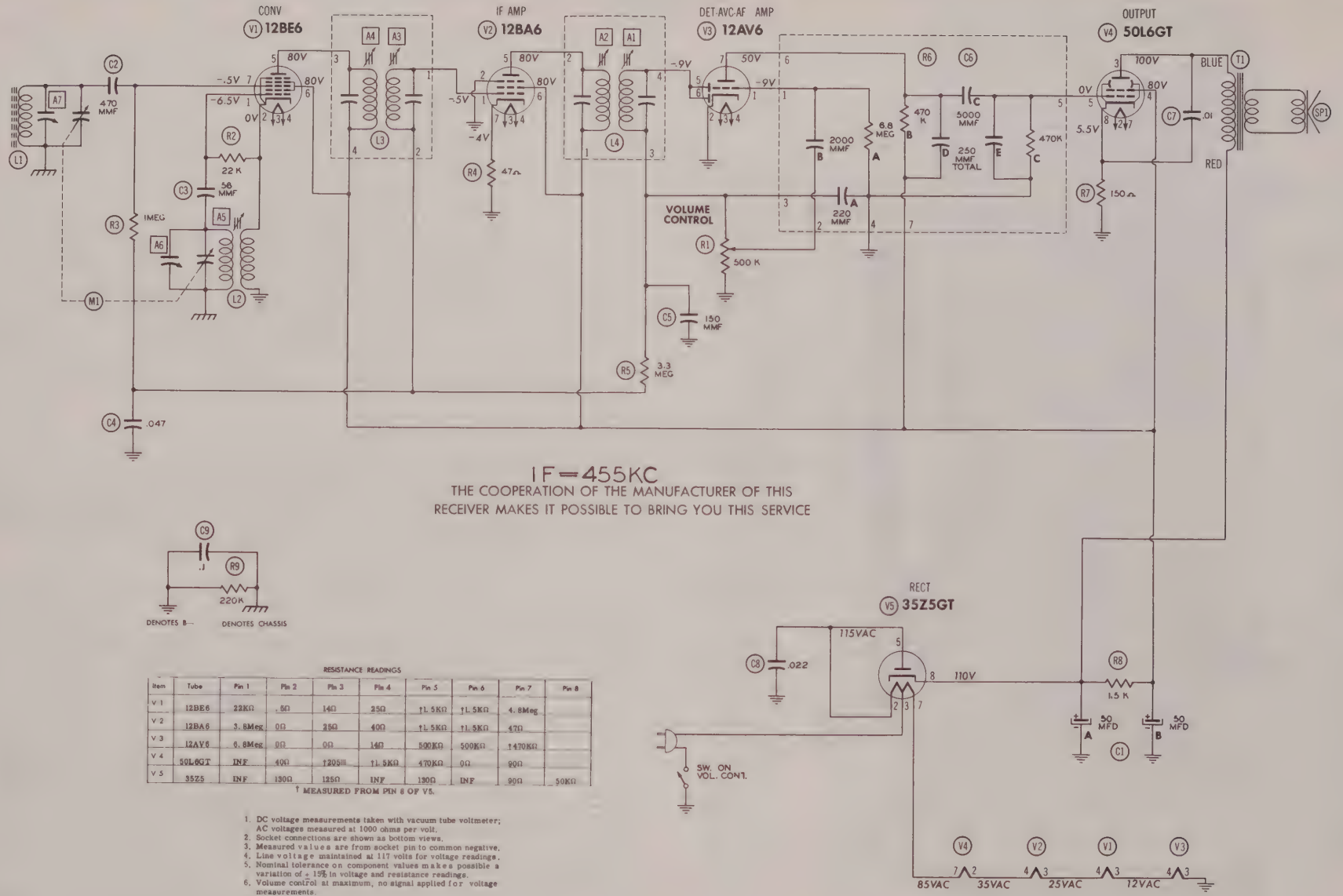


DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



CAPEHART MODEL T-54



IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	22KΩ	.5Ω	14Ω	25Ω	†1.5KΩ	†1.5KΩ	4.8Meg	
V 2	12BA6	3.8Meg	0Ω	25Ω	40Ω	†1.5KΩ	†1.5KΩ	47Ω	
V 3	12AV6	6.8Meg	0Ω	0Ω	14Ω	500KΩ	500KΩ	†470KΩ	
V 4	50L6GT	INF	40Ω	†205Ω	†1.5KΩ	470KΩ	0Ω	90Ω	
V 5	35Z5	INF	130Ω	125Ω	INF	130Ω	INF	90Ω	50KΩ

† MEASURED FROM PIN 8 OF V5.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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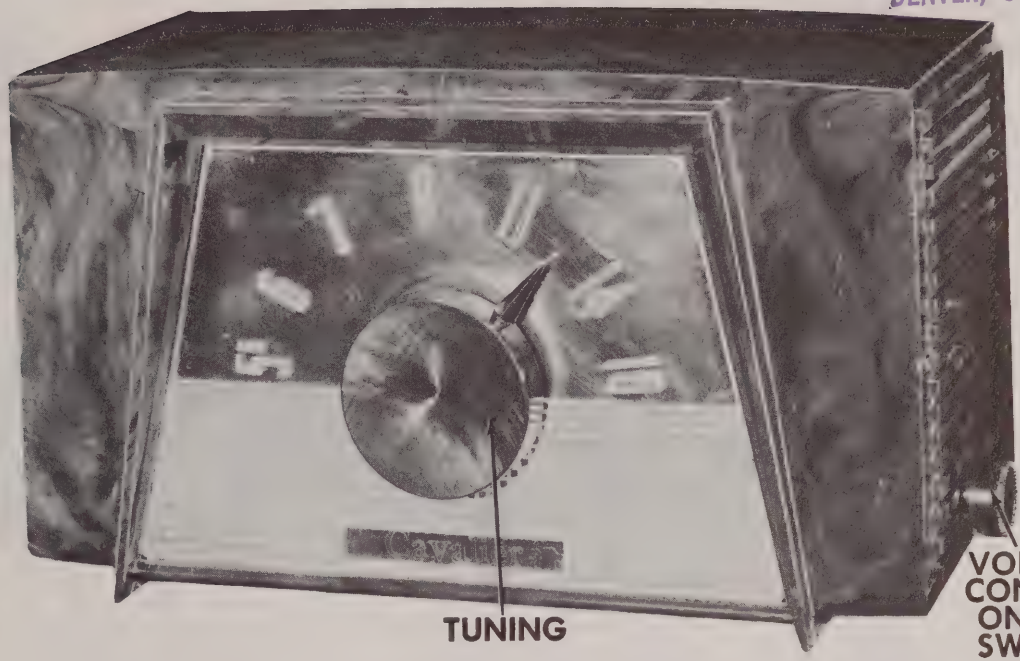

CAVALIER
MODEL 5R1

TRADE NAME	Cavalier Model 5R1
MANUFACTURER	Hinners-Galanek Radio Corp., 2514 Broadway, Long Island City, 6, N.Y.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC RATING .24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535KC-1640KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1640KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A6	"

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PARTS LIST AND DESCRIPTIONS

CAVALIER MODEL 5R1

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		CAVALIER PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	CAVALIER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	70	150		PRS150/80-40		BBRD8415		TCD498	TVA-2460	Red
B	30	150								Blue
C2	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C3	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C4	.0022	400		P488-002	D6-202	CUB4D2	GP2L-202	PT422	4TM-D2	
C5	300			SI300	D6-301	TP42	GP2K-301	UC-533	5GA-T3	
C6	.01	400		P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C7	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C8	.05	400		489ZX-05	DF-503	CUB4S5		PT415	4TM-S5	
C9	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	

CONTROLS

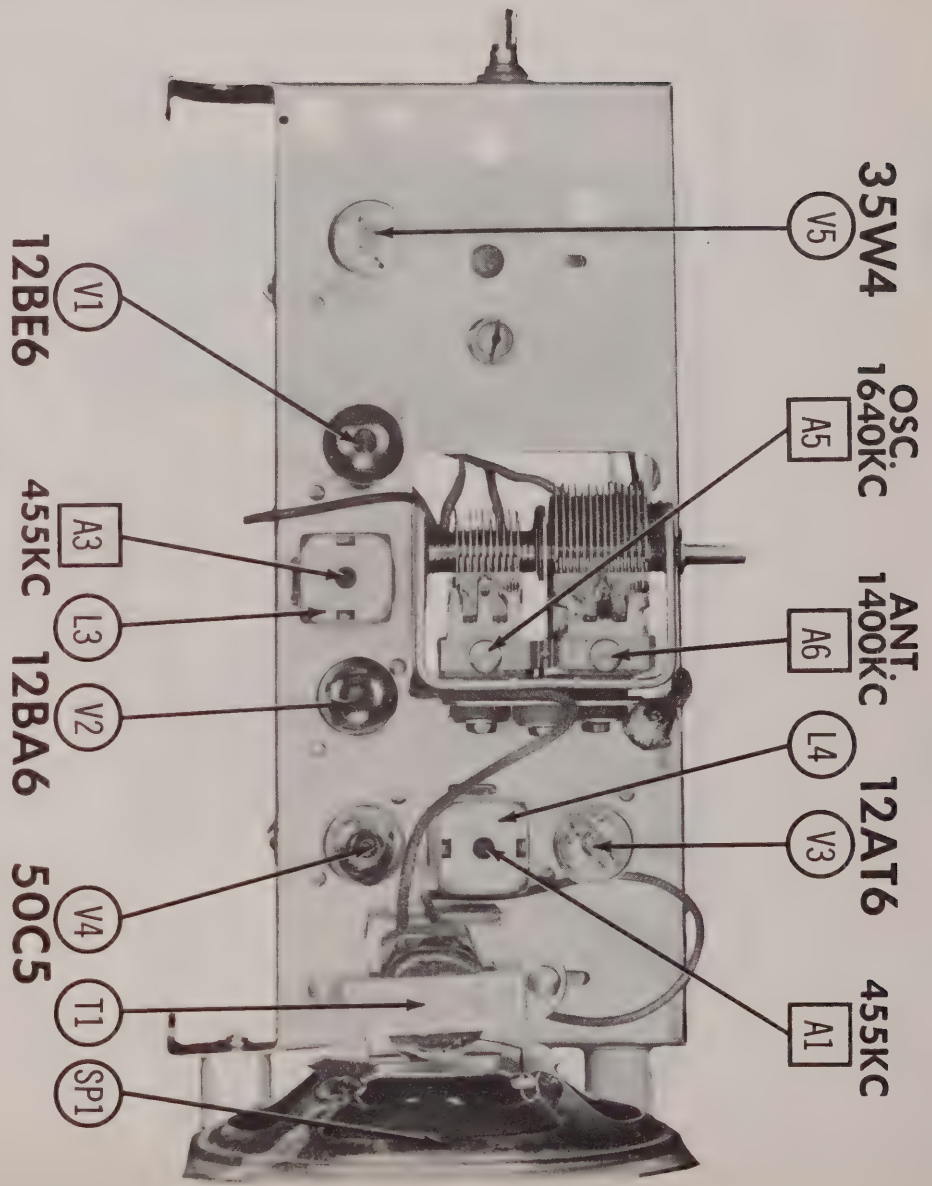
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CAVALIER PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	120-106	Q13-133	A47-500K-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CAVALIER PART No.	IRC PART No.	
R2	22KΩ	½		BTS-22K	
R3	270Ω	½		BTS-270	
R4	2.2Meg	½		BTS-2.2Meg	
R5	10Meg	½		BTS-10Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	CAVALIER PART No.	IRC PART No.	
R6	220KΩ	½		BTS-220K	
R7	470KΩ	½		BTS-470K	
R8	150Ω	½		BTS-150	
R9	2200Ω	2		BTB-2200	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CAVALIER PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.4KΩ	3.3Ω	Part of Spkr.	A-3332	A-3025	S-12X	Z1101	26S58	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	CAVALIER PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.3Ω		ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

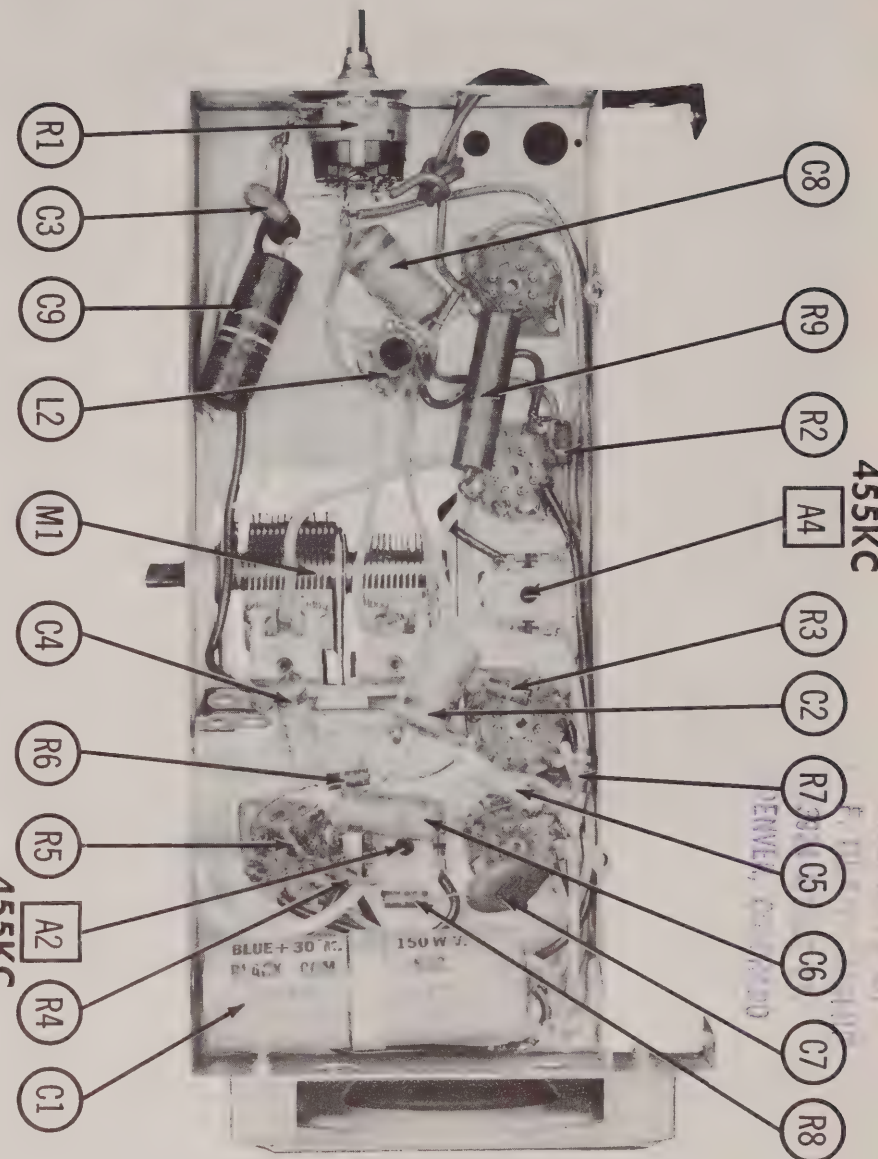
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	CAVALIER PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.3Ω						
L2	Osc. Coil	.4Ω	5.5Ω		14-1073		69-Osc. ■	
L3	Input IF	17Ω	17Ω		16-6758	BC-352	12-C1	
L4	Output IF	17Ω	17Ω		16-6758	BC-353	12-C2	

■ Drill new mounting hole.

MISCELLANEOUS

ITEM No.	PART NAME	CAVALIER PART No.	NOTES
M1	Tuning Cap.	160-104	36-470MMF, 33-195MMF

CHASSIS—BOTTOM VIEW



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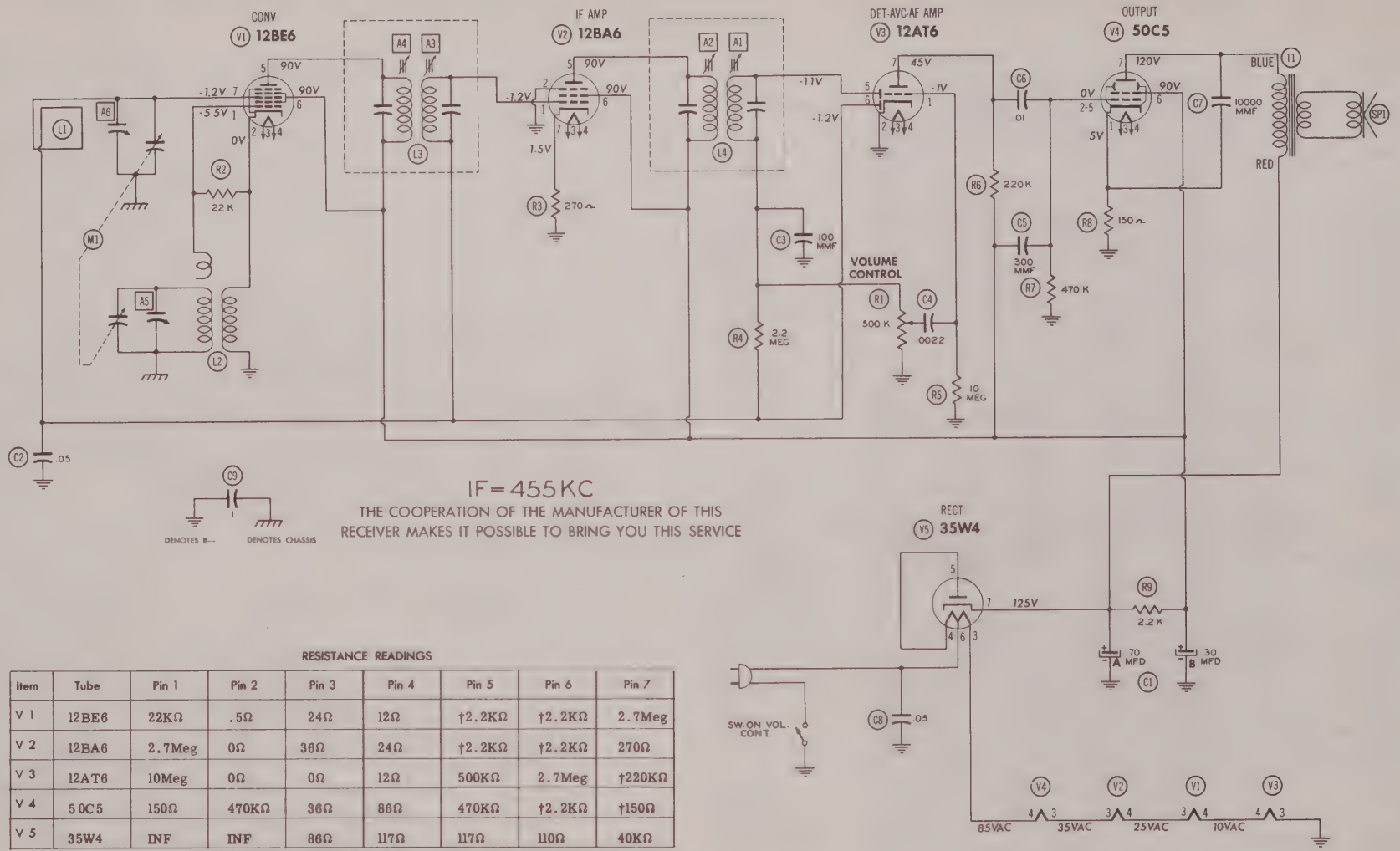
CAVALIER MODEL 5R1



IF = 455 KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.5Ω	24Ω	12Ω	†2.2KΩ	†2.2KΩ	2.7Meg
V 2	12BA6	2.7Meg	0Ω	36Ω	24Ω	†2.2KΩ	†2.2KΩ	270Ω
V 3	12AT6	10Meg	0Ω	0Ω	12Ω	500KΩ	2.7Meg	†220KΩ
V 4	50C5	150Ω	470KΩ	36Ω	86Ω	470KΩ	†2.2KΩ	†150Ω
V 5	35W4	INF	INF	86Ω	117Ω	117Ω	110Ω	40KΩ

† MEASURED FROM PIN 7 OF V5

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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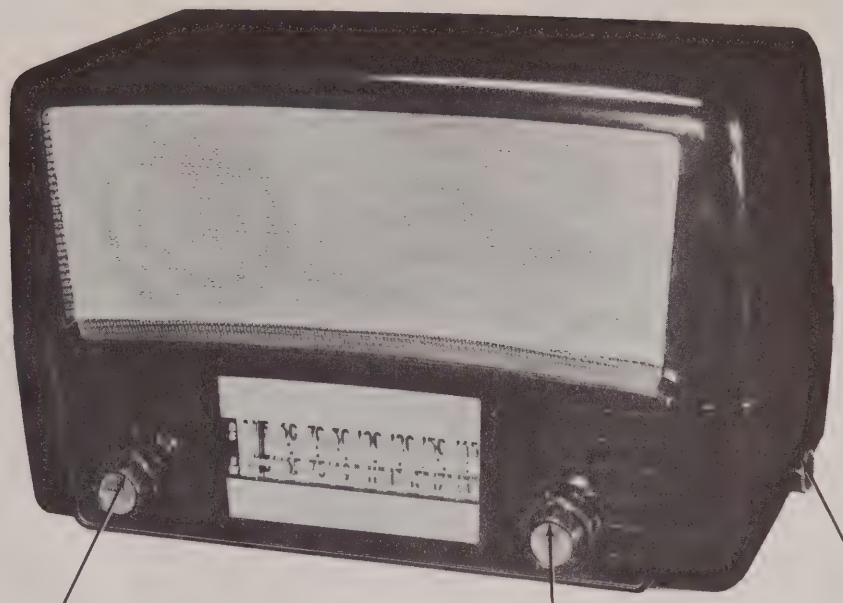

CAVALIER
MODEL 6A2

TRADE NAME	Cavalier Model 6A2
MANUFACTURER	Hinners-Galanek Radio Corp., 2514 Broadway, Long Island City 6, N.Y.
TYPE SET	AC-DC Operated 2 Band AM Superheterodyne Receiver
TUBES (Six)	Types 12BA6 RF Amp., 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 35C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	.26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1650KC
SHORT WAVE	5.8-18.3MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to antenna stator lug on tuning gang. Low side to B-.	455KC (400~Mod)	BC	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	"	"	"	"	A5	Adjust for MINIMUM output.
3.	400Ω carbon resistor	High side thru 400Ω to antenna lead. Low side to B-.	18.3MC	SW	"	"	A6	Adjust for maximum output. If two peaks are obtained use the one that occurs with least capacity.
4.	"	"	15MC	"	Tune to 15MC	"	A7	Adjust for maximum output while rocking tuning gang thru 15MC signal.
5.	100MMF	High side thru 100 MMF to antenna lead. Low side to B-.	1650KC	BC	Tuning gang fully open	"	A8	Adjust for maximum deflection.
6.	"	"	1500KC	"	Tune to 1500KC signal	"	A9	"
7.	"	"	600KC	"	Tune to 600KC signal	"	A10	Adjust for maximum output while rocking tuning gang thru 600KC signal.

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PARTS LIST AND DESCRIPTIONS

CAVALIER MODEL 6A2

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: CAVALIER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amplifier	12BA6	12BA6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amplifier	12BA6	12BA6	7BK	
V4	Det.-AVC-AF Amp	12AT6	12AT6	7BT	
V5	Output	35C5	35C5	7CV	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CAVALIER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■60	200	150-108	AFH3-179		D067		FP433 TC47	TVL-3725	
B	▲10	450								
C	▲10	200								
D	50	50								
C2	.05	200	152-105	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	.01	400	152-103	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C4	300			SI300	D6-301	TP42	GP2K-301	UC-533	5GA-T3	
C5	100		156-102	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C6	11.5	500								Note 2
C7	33			SI33NP0	TCZ-33	TZ18	NP0K-330	ZT-5433	5TCC-Q33	Note 2
C8	4000	500	154-101	1468-004		1W5D39		MCB463	MS-24	
C9	.05	400	152-105	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C10	.05	400	152-105	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C11	300			SI300	D6-301	TP42	GP2K-301	UC-533	5GA-T3	Note 1
C12	.0022	600	152-101	P688-002	D6-202	CUB6D2	GP2-333-202	PT622	6TM-D2	Note 1
C13	300			SI300	D6-301	TP42	GP2K-301	UC-533	5GA-T3	Note 1
C14	.01	400	152-103	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	Note 1
C15	.01	400	152-103	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	Note 1
C16	.05	400	152-105	489ZX-05	DF-503	PJ4S5		PT415	4TM-S5	
C17	300			SI300	D6-301	TP42	GP2K-301	UC-533	5GA-T3	

Note 1. Some models may contain these parts in one unit.
Note 2. Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CAVALIER PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	120-112	Q13-133	A47-500K-Z	B-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R1A

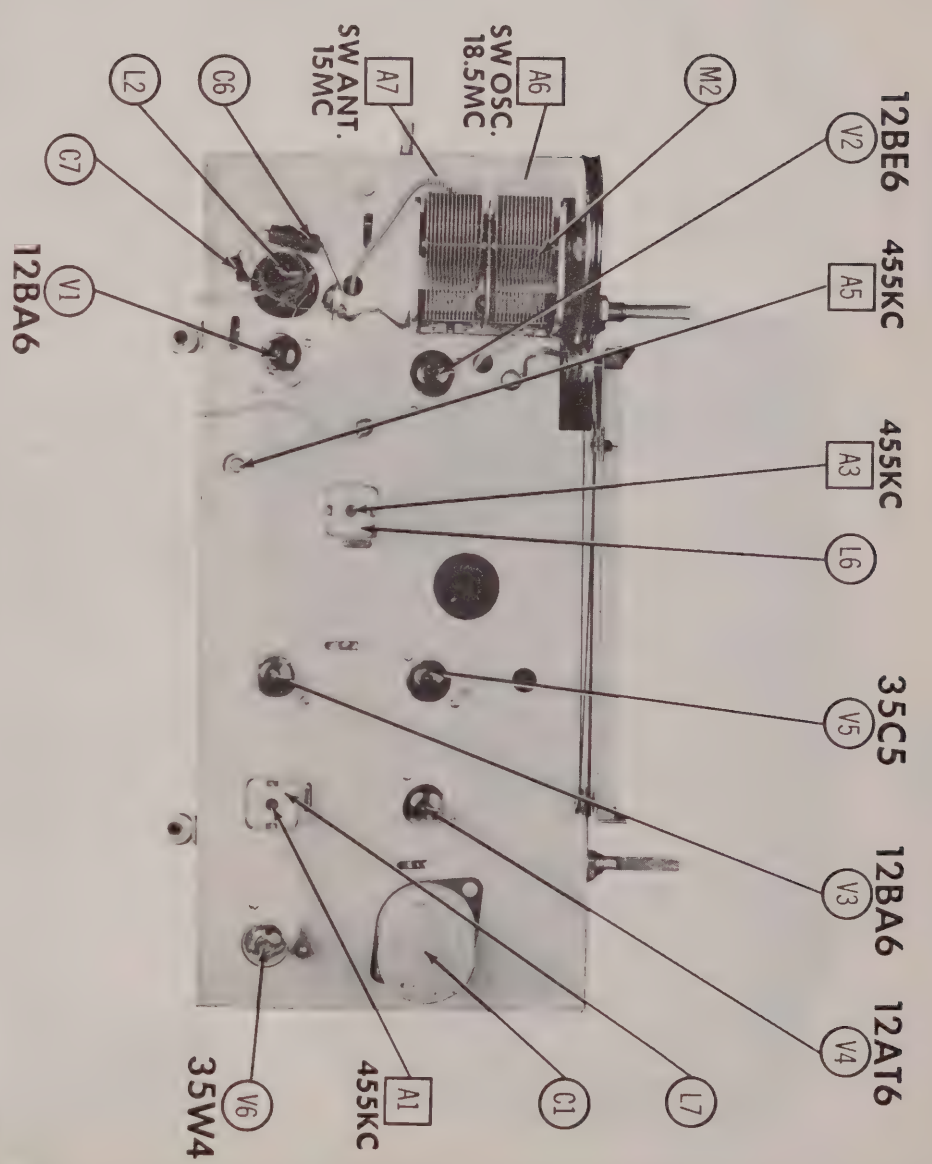
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: CAVALIER PART No.	IRC PART No.	NOTES
R2	2.2Meg	½	180-107	BTS-2.2Meg	
R3	22Ω	½	180-113	BTS-22	
R4	4700Ω	½	180-133	BTS-4700	
R5	68Ω	½		BTS-68	Note 3
R6	22KΩ	½	180-102	BTS-22K	
R7	100KΩ	½	180-116	BTS-100K	
R8	1000Ω	½	180-106	BTS-1000	
R9	150Ω	½	180-111	BTS-150	
R10	2.2Meg	½	180-107	BTS-2.2Meg	
R11	6.8Meg	½	180-135	BTS-6.8Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: CAVALIER PART No.	IRC PART No.	NOTES
R12	200KΩ	½		BTS-220K	
R13	470KΩ	½	180-110	BTS-470K	
R14	150Ω	½	180-111	BTS-150	
R15	2200Ω	1		BTA-2200	Note 1
R16	2200Ω	1		BTA-2200	Note 2
R17	68Ω	½	180-129		
R18	22Ω	½	180-113	BTS-22	
R19	100KΩ	½		BTS-100K	Note 1
R20	6000Ω				Note 1

Note 1. Not used in all models.
Note 2. Some models may use a 1500Ω resistor in this application.
Note 3. Some models may use a 150KΩ resistor in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: CAVALIER PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.3KΩ	3.3Ω	Part of Spkr.	A-3876	A-2928	S-1X	Z1001	24S50	

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: CAVALIER PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3.3Ω	175-108	ST-105 Mod. P5-X	5A1	

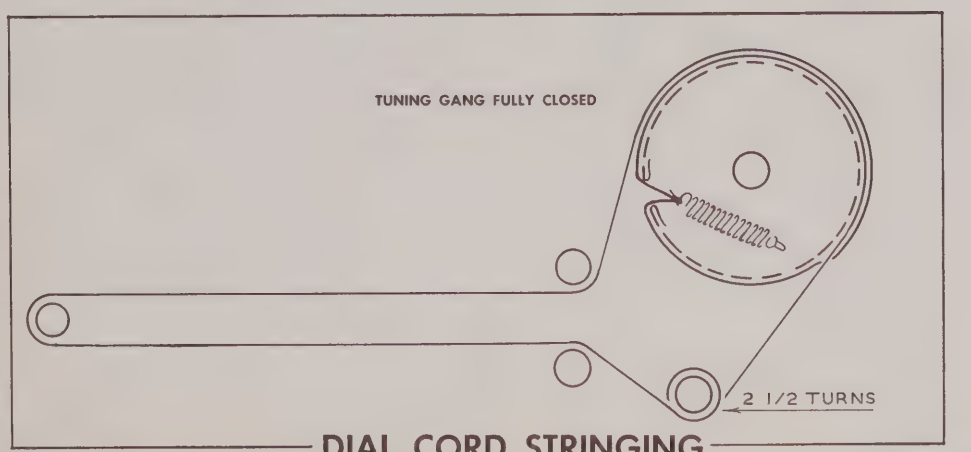
COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: CAVALIER PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Loop Ant.	0Ω	1Ω	134-101				
L2	Sw.Ant.Coil	.7Ω	0Ω	132-105	14-1064 ▲		C-5495A*	
L3	RF Choke	1.8Ω		132-106	19-1005 ■		4612 ■	Wound on 15KΩ resistor
L4	IF Trap	50Ω		130-105			816-X1	
L5A	BC Osc.Coil	.8Ω	4Ω					
B	Sw.Osc.Coil	0Ω		136-110	14-2862			0Ω tapped
L6	Input IF	17Ω	17Ω	130-102	16-6758	BC-352	12-C1	
L7	Output IF	17Ω	17Ω	130-102	16-6758	BC-353	12-C2	

* Drill mounting hole.
▲ Leads sufficient suppprt.
■ Parallel with 15KΩ resistor.

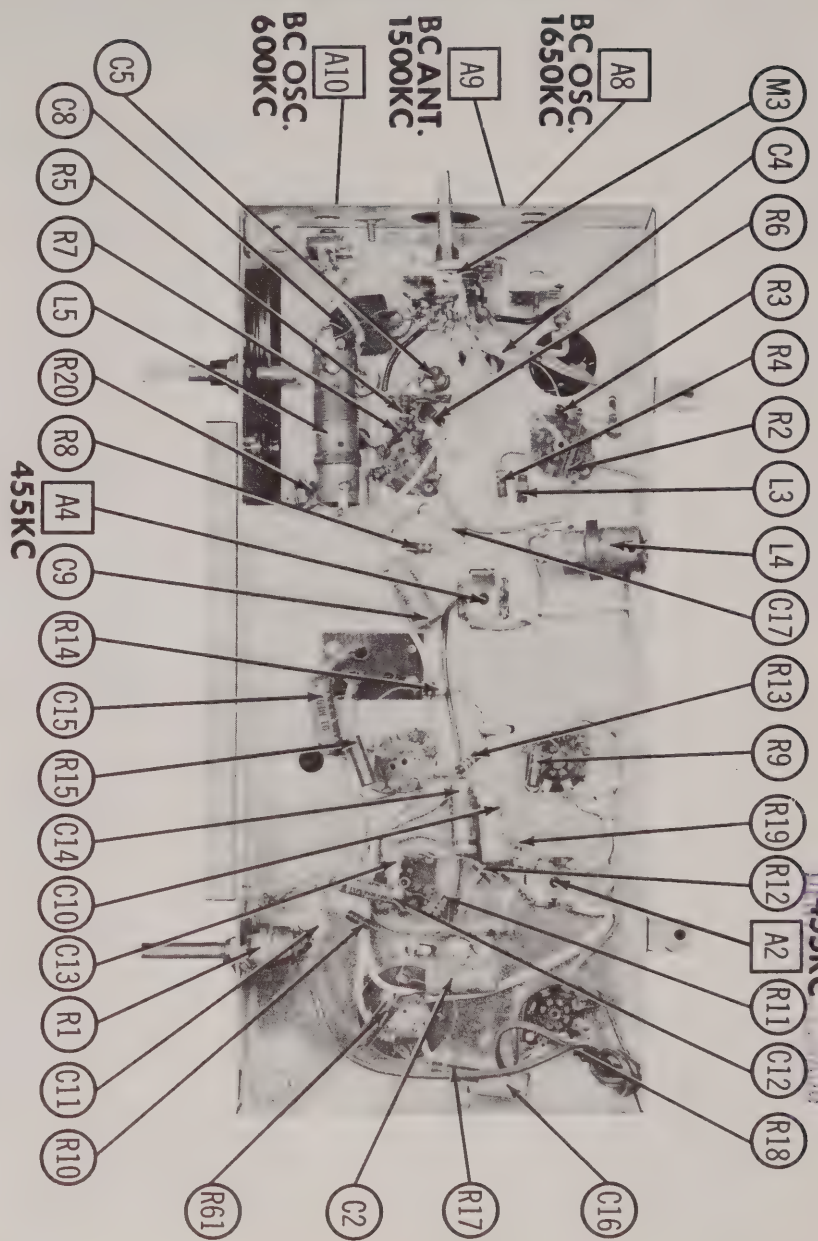
MISCELLANEOUS

ITEM No.	PART NAME	CAVALIER PART No.	NOTES
M1	Dial Light	140-116	Bayonet #47
M2	Tuning Cap.	160-101	30-443MMF, 30-443MMF
M3	Switch	125-105	Shortwave-Broadcast
A8,A9	Trimmer Cap.	162-102	2 Section (each 420MMF), Ant. & Osc.(broadcast)
A10	Trimmer Cap.	162-103	680MMF, Osc. (broadcast)
	Cabinet	210-106	Walnut, Bakelite
	Knob	220-112	Tuning & volume
	Knob	220-113	Band switch
	Dial Scale	215-116	
	Dial Pointer	140-115	



DIAL CORD STRINGING

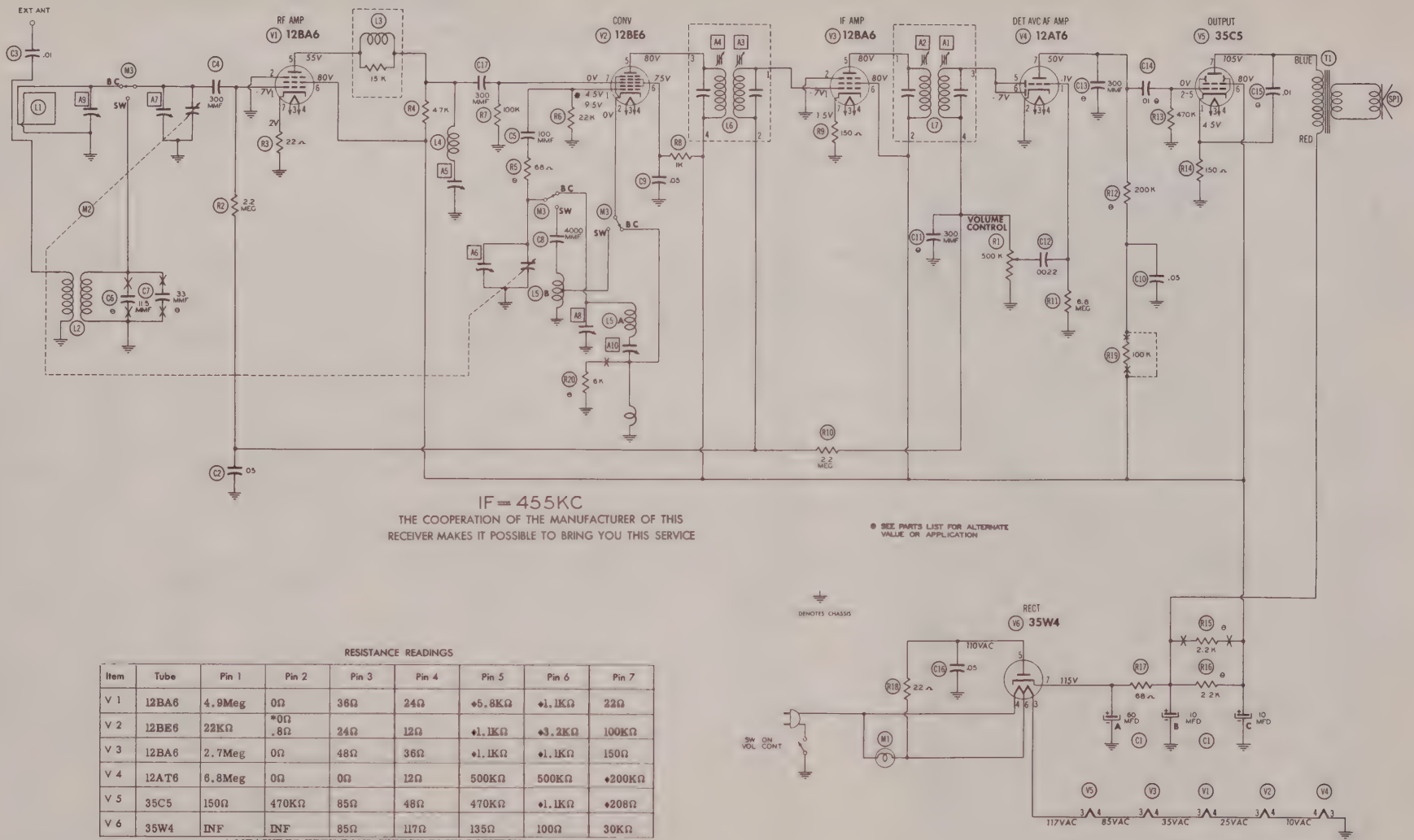
CHASSIS—BOTTOM VIEW



SET 265 FOLDER 5

CAVALIER MODEL 6A2

CAVALIER MODEL 6A2



IF = 455KC

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● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BA6	4.9Meg	0Ω	36Ω	24Ω	♦5.8KΩ	♦1.1KΩ	22Ω
V 2	12BE6	22KΩ	*0Ω .8Ω	24Ω	12Ω	♦1.1KΩ	♦3.2KΩ	100KΩ
V 3	12BA6	2.7Meg	0Ω	48Ω	36Ω	♦1.1KΩ	♦1.1KΩ	150Ω
V 4	12AT6	6.8Meg	0Ω	0Ω	12Ω	500KΩ	500KΩ	♦200KΩ
V 5	35C5	150Ω	470KΩ	85Ω	48Ω	470KΩ	♦1.1KΩ	♦208Ω
V 6	35W4	INF	INF	85Ω	117Ω	135Ω	100Ω	30KΩ

* MEASURED WITH BAND SWITCH IN SW POSITION
♦ MEASURED FROM PIN 7 OF V6

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements

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GENERAL ELECTRIC MODELS 17T20, 21C103, 21C104, 21T22, 21T23, 21T24, 21T25

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MODEL 17T20

GENERAL ELECTRIC MODELS 17T20, 21C103, 21C104, 21T22, 21T23, 21T24, 21T25

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DATE 2–55 SET 265 FOLDER 6

GENERAL ELECTRIC MODELS 17T20, 21C103, 21C104, 21T22, 21T23, 21T24, 21T25

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GENERAL ELECTRIC MODEL 17T20

TRADE NAME	General Electric Models 17T20, UHF, 21C103, UHF, 21C104, UHF, 21T22, UHF, 21T23, UHF, 21T24, UHF, 21T25, UHF
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, N.Y.
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 1.5 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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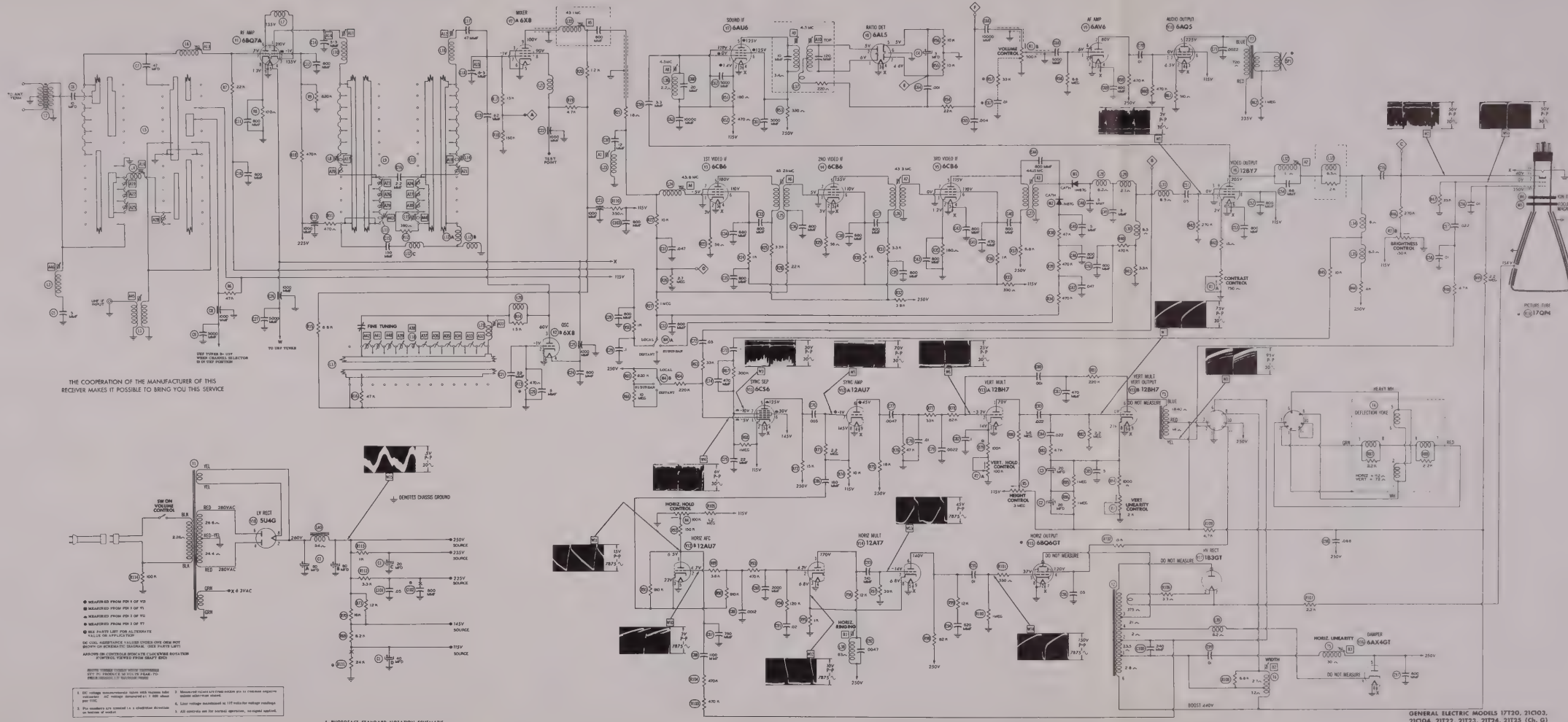
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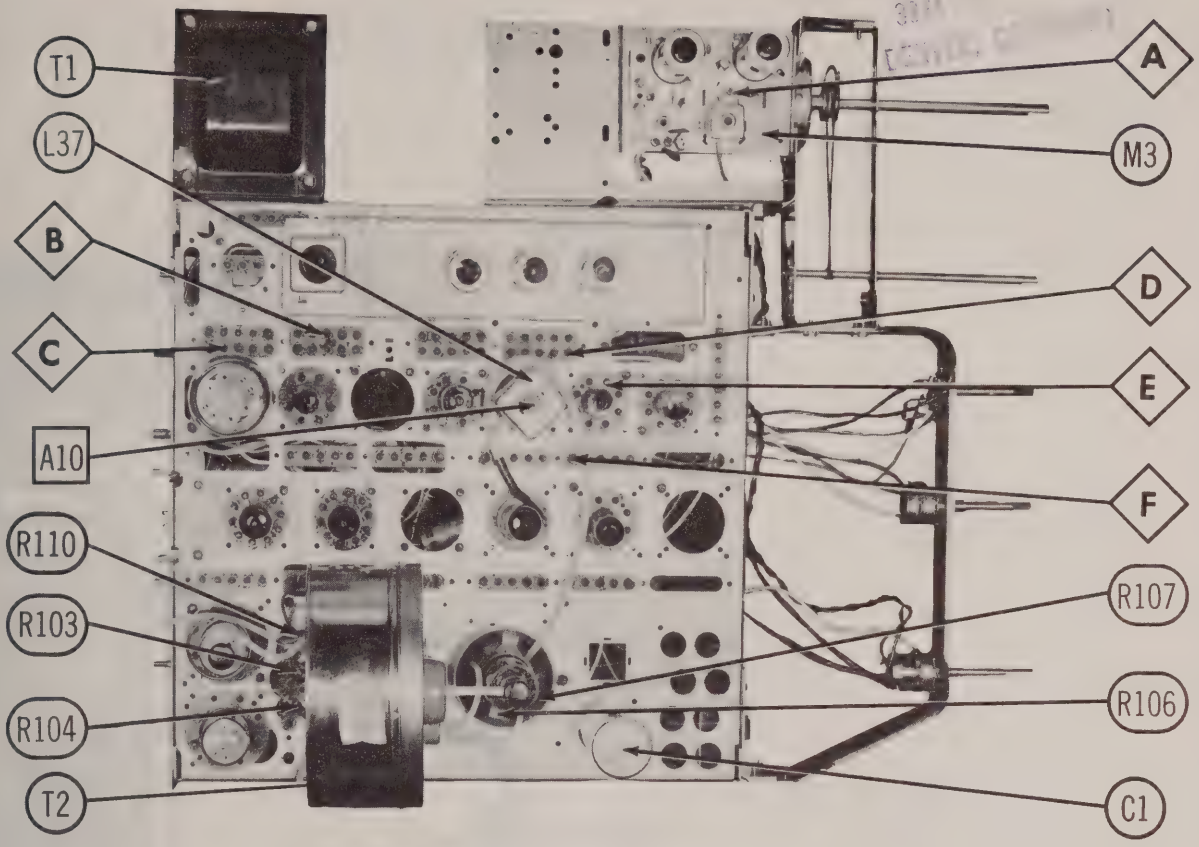
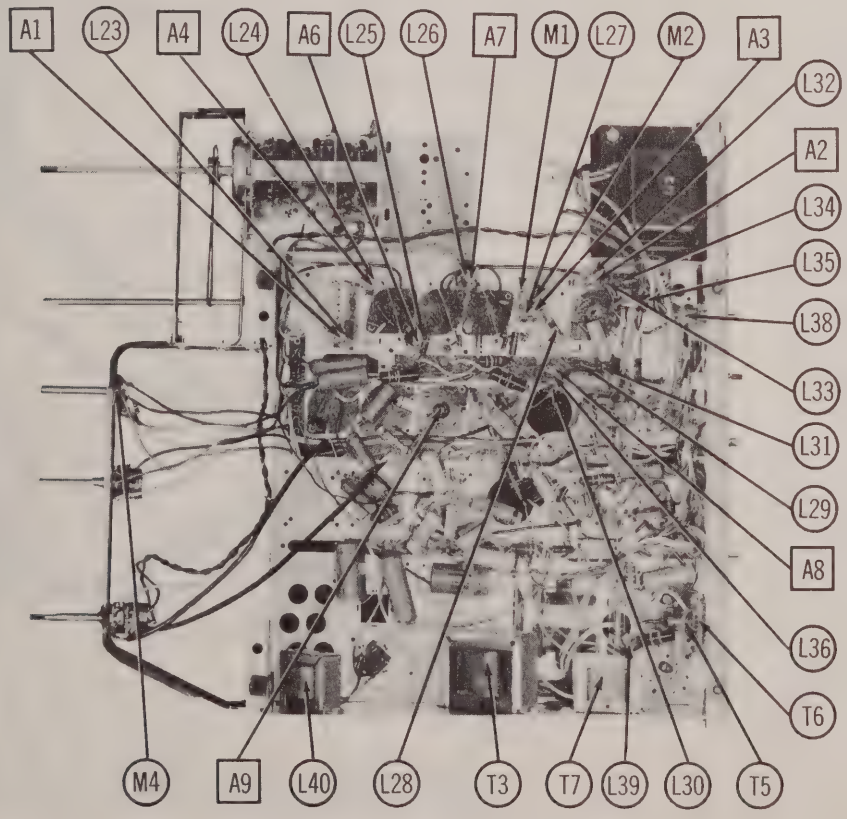
GENERAL ELECTRIC MODELS 17T20, 21C103, 21C104, 21T22, 21T23, 21T24, 21T25 (Ch. G)

PROPERTY

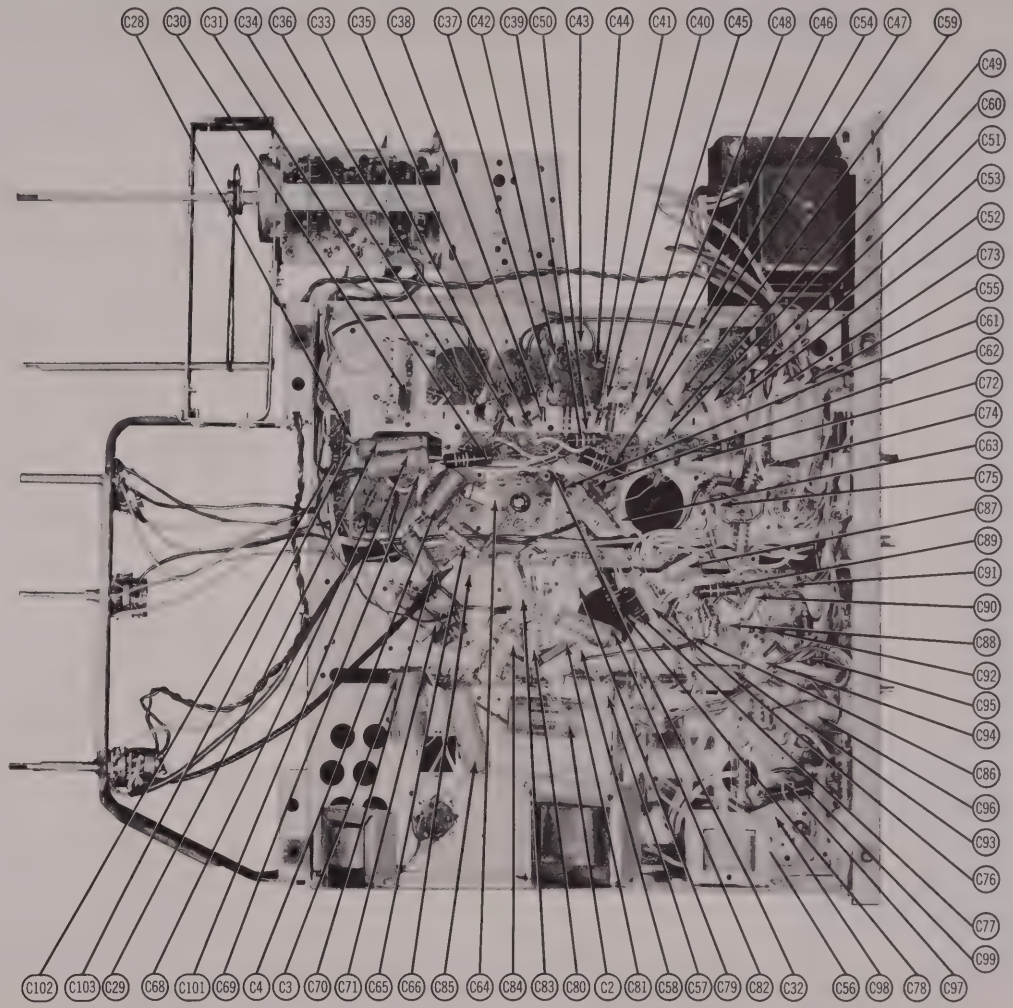


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

SET 265 FOLDER 6



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART

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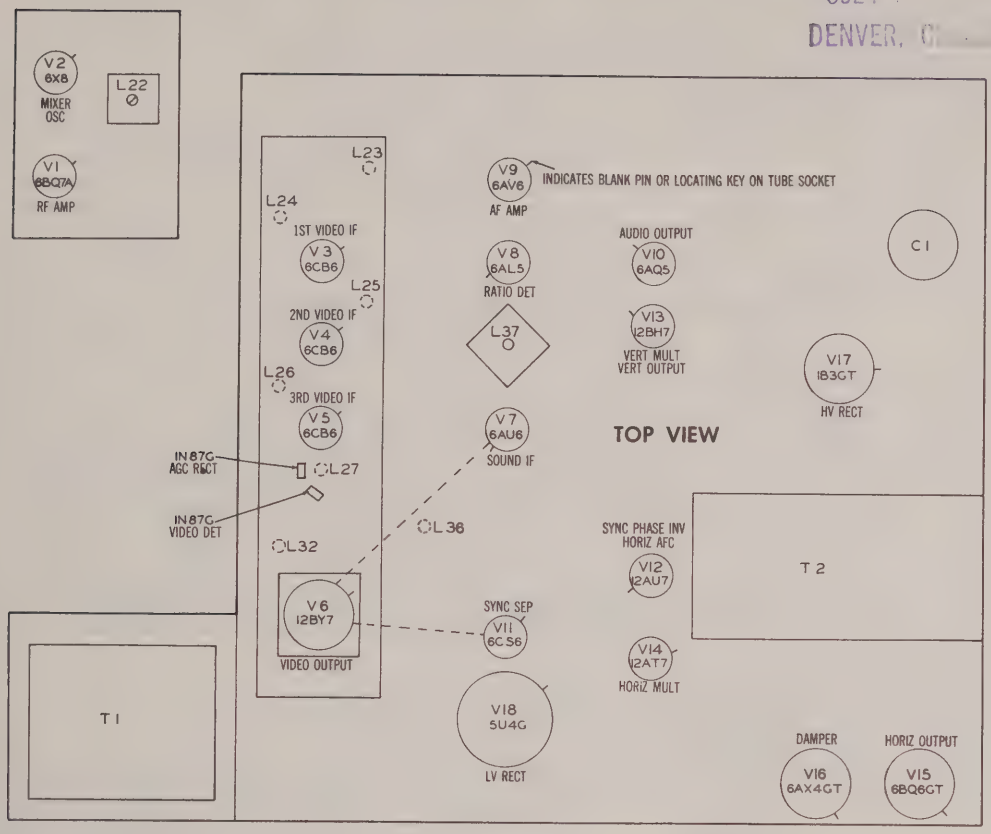


TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - V18

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V6, V19
Has pic, no sound - V7, V8, V9, V10

SYNC FAILURE
No vert. sync - V12, V13
No horiz. sync - V12, V14
No vert. or horiz. sync - V11, V12

SWEEP FAILURE
No raster, has sound - V14, V15, V16, V17, V19
No vertical deflection - V13
Poor vert. linearity or foldover - V13
Poor horiz. linearity or foldover - V14, V15, V16
Narrow picture - V14, V15, V16, V17, V18
Vert. off freq. - V12, V13
Horiz. off freq. - V12, V14

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal output tube (6BQ6/V15) from its socket. Do not remove the horizontal multivibrator tube (V14) to disable the high voltage.
Allow a 20 minute warm-up period for receiver and test equipment.

TRAP ALIGNMENT

Turn the volume control and area control maximum counter clockwise. Turn the contrast control maximum clockwise.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to point Ⓐ. Low side to chassis.	Not used	47.25MC (400%Mod)	11, 12 or 13	Vert. Amp. thru 10KΩ to point Ⓑ. Low side to chassis.	A1	Adjust for MINIMUM 400% indication on scope. If necessary, increase generator output and use maximum scope gain.
2.	"	High side to point Ⓑ. Low side to chassis.	"	4.5MC (400%Mod)	"	Vert. Amp. thru detector (Fig.1) to point Ⓒ.	A2	"

VIDEO IF ALIGNMENT

Turn the contrast control fully counter clockwise.
Connect the negative lead of a 4.5 volt bias supply to point Ⓓ. Connect the positive lead to chassis.
If during alignment two peaks occur, the correct peak may be obtained by turning the slug fully counter clockwise then clockwise until the first peak appears.
If the receiver is known to be only slightly misaligned, omit "Video IF Alignment" and continue alignment as outlined under "Overall Video IF Response Check".
Use only enough signal generator output to provide usable indication on scope.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3.	.001MFD	High side to point Ⓐ. Low side to chassis.	44.15MC (Unmod)	11, 12 or 13	DC probe to point Ⓑ. Common to chassis.	A3	Adjust for maximum deflection.
4.	"	"	43.8MC	"	"	A4	"
5.	"	"	43.1MC	"	"	A5	"
6.	"	"	45.25MC	"	"	A6	"
7.	"	"	43.3MC	"	"	A7	"

OVERALL VIDEO IF RESPONSE CHECK

The channel selector switch should be set to channel 11, 12 or 13. Select the channel (11, 12 or 13) on which the response curve does not change shape when tuning the fine tuning control.
Turn contrast control fully counter clockwise.
Leave bias supply connected as under "Video IF Alignment".
Attenuate the sweep generator output so that .75 volt peak to peak on scope provides 2 inches of vertical deflection.
Connect the synchronised sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.001MFD	High side to point Ⓐ. Low side to chassis.	44MC (10MC Swp)	41.25MC 42.5MC 45.0MC 45.75MC 47.25MC	11, 12 or 13	Vert. Amp. thru 10KΩ to point Ⓑ. Low side to chassis.		Adjust A3 thru A7 to obtain response similar to Fig. 2, A7 positions 41.25MC marker. Adjust A4 and A5 for symmetrical peak region response with 45.75MC marker as shown. Adjust A3 for maximum amplitude symmetrical peak not exceeding 115%.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

If a signal generator providing a 4.5MC signal of crystal accuracy is not available restore the receiver to normal operating condition and tune in a TV station. Connect the VTVM and adjust A8, A9 and A10 as in steps 9 and 10.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.01MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (Unmod)	Any unused channel	DC probe to point Ⓑ. Common to chassis.	A8, A9	Adjust for maximum deflection.
10.	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Repeat steps 9 and 10.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 80% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.01MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (450KC Swp.)	4.5MC	Any unused channel	Vert. Amp. to point Ⓑ. Low side to chassis.	A8, A9	Disconnect stabilising capacitor C4. Adjust for curve of maximum amplitude and symmetry similar to Fig. 3.
10.	"	"	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A10	Reconnect stabilizing capacitor C4. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 4. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

RF AND MIXER ALIGNMENT (TUNER RJX-062)

Remove the 300Ω transmission line from tuner input terminals.
Reduce the -4.5 volt bias supply at point Ⓓ to -3 volts.
If L31 requires adjustment (normally, adjustment is not required) the tuner cover must be removed and replaced before and after each adjustment.
Connect the synchronised sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Fig. 5	Thru dummy (Fig. 5) across primary of antenna input coil (L2).	213MC (15MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 10KΩ to point Ⓐ. Low side to tuner chassis.	A11, A12 A13	Adjust for response of maximum amplitude and symmetry similar to Fig. 6. If tilt exceeds 15% it may be necessary to compress or expand coil turns of L31. Use insulated tool to prevent shorting B+.
12.	"	"	177MC (15MC Swp)	175.25MC 179.75MC	7	"	A14, A15	Adjust for response similar to Fig. 6. If necessary, reposition C12 for maximum gain and equal peaks. SLIGHTLY reposition L8 and L14 (coils whose adjustments are (A17 and A18) to obtain desired coupling. Exercise care so that coils do not contact each other.

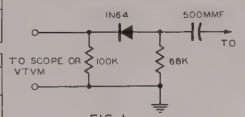


FIG. 1

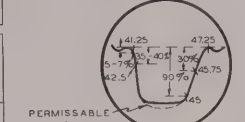


FIG. 2

FIG. 3

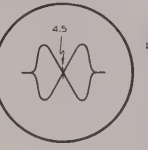
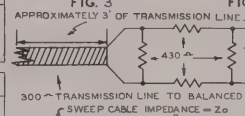


FIG. 4



Zo	R1	Ro
50 ~	56 ~	120 ~
72 ~	82 ~	110 ~
92 ~	110 ~	100 ~

FIG. 5

FIG. 6

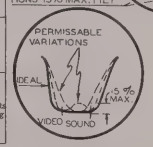


FIG. 7

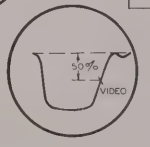


FIG. 8

RF AND MIXER ALIGNMENT (TUNER RJX-062) CONT'D

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Fig. 5	Thru dummy (Fig. 5) across primary of antenna input coil (L2).	207MC (15MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to point Ⓐ. Low side to tuner chassis.		Check for response curve similar to Fig. 6. If response is not within limits on any high band channel make compromise adjustments of A1 thru A15 with channel switch set to that channel. Recheck all other high band channels to see that they have not been seriously affected.
			201MC (15MC Swp)	199.25MC 203.75MC	11			
			195MC (15MC Swp)	193.25MC 197.75MC	10			
			189MC (15MC Swp)	187.25MC 191.75MC	9			
			183MC (15MC Swp)	181.25MC 185.75MC	8			
14.	"	"	85MC (15MC Swp)	83.25MC 87.75MC	6	"	A16, A17 A18	Adjust for maximum amplitude flat topped response curve similar to Fig. 7.
15.	"	"	79MC (15MC Swp)	77.25MC 81.75MC	5	"	A19, A20 A21	If necessary, adjust by compressing or expanding coil turns to obtain response similar to Fig. 7.
16.	"	"	69MC (15MC Swp)	67.25MC 71.75MC	4	"	A22, A23 A24	"
17.	"	"	63MC (15MC Swp)	61.25MC 65.75MC	3	"	A25, A26 A27	"
18.	"	"	57MC (15MC Swp)	55.25MC 59.75MC	2	"	A28, A29 A30	"

OSCILLATOR ALIGNMENT (TUNER RJX-062)

Remove the bias battery from point Ⓓ and connect a short jumper from point Ⓓ to chassis.
Set the fine tuning control 2/3 turn from its fully counter clockwise position and leave in this position throughout the entire oscillator alignment.
Connect the synchronised sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
19.	Fig. 5	Thru dummy (Fig. 5) across primary of antenna input coil (L2)	213MC (10MC Swp)	211.25MC	13	Vert. Amp. thru 10KΩ to point Ⓐ. Low side to chassis.	A31	Adjust to place video marker at 50% on response curve as in Fig. 8.
			207MC (10MC Swp)	205.25MC	12		A32	
			201MC (10MC Swp)	199.25MC	11		A33	
			195MC (10MC Swp)	193.25MC	10		A34	
			189MC (10MC Swp)	187.25MC	9		A35	
			183MC (10MC Swp)	181.25MC	8		A36	
			177MC (10MC Swp)	175.25MC	7		A37	
			85MC (10MC Swp)	83.25MC	6		A38	
			79MC (10MC Swp)	77.25MC	5		A39	
			69MC (10MC Swp)	67.25MC	4		A40	
			63MC (10MC Swp)	61.25MC	3		A41	
			57MC (10MC Swp)	55.25MC	2		A42	

UHF 44MC ALIGNMENT

Connect a short jumper from point Ⓓ to chassis. Leave fine tuning control set as under "Oscillator Alignment".
Switch channel selector to "UHF" position.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
20.	Fig. 5	Thru dummy (Fig. 5) across UHF input jack.	44MC (10MC Swp)	40.0MC 45.75MC	UHF	Vert. Amp. thru 10KΩ to point Ⓐ. Low side to chassis.	A43, A44 A45	Adjust for response similar to Fig. 8 with video marker at 50%. A43 and A44 affects curve shape. Adjust A45 for maximum amplitude. The spacing between coils whose adjustment is A43 and A44 affects band width. If necessary, reposition these coils. Exercise care so that the coils do not contact each other. Remove the jumper from point Ⓓ to chassis

UHF TUNER ALIGNMENT

The UHF tuner has been properly aligned at the factory and is very stable. Alignment of this portion of the receiver is not recommended in the field.

VHF IF TRAP ALIGNMENT

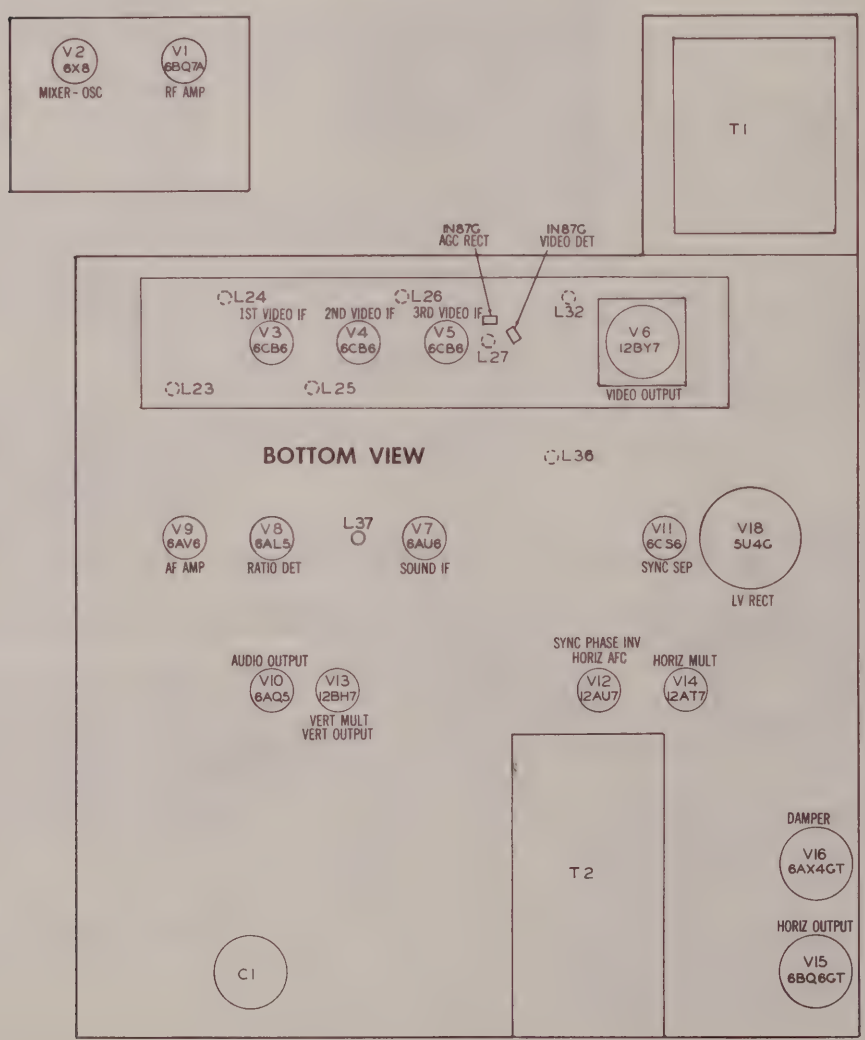
The IF trap (A46) may be aligned by tuning in the station on which the interference occurs and adjusting A46 for minimum interference in the picture. Be careful not to adjust A46 so that it attenuates channel 2 response.
If the frequency of the interfering signal is known, the trap may be adjusted as in step 21.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
21.	Fig. 5	Thru dummy (Fig. 5) across antenna terminals	44MC (10MC Swp)	Set to freq. of interfering signal	2	Vert. Amp. thru 10KΩ to point Ⓐ. Low side to chassis.	A46	Connect the negative lead of a 3 volt bias battery to point Ⓓ. Connect the positive lead to chassis. Adjust for minimum marker amplitude. Remove bias battery.

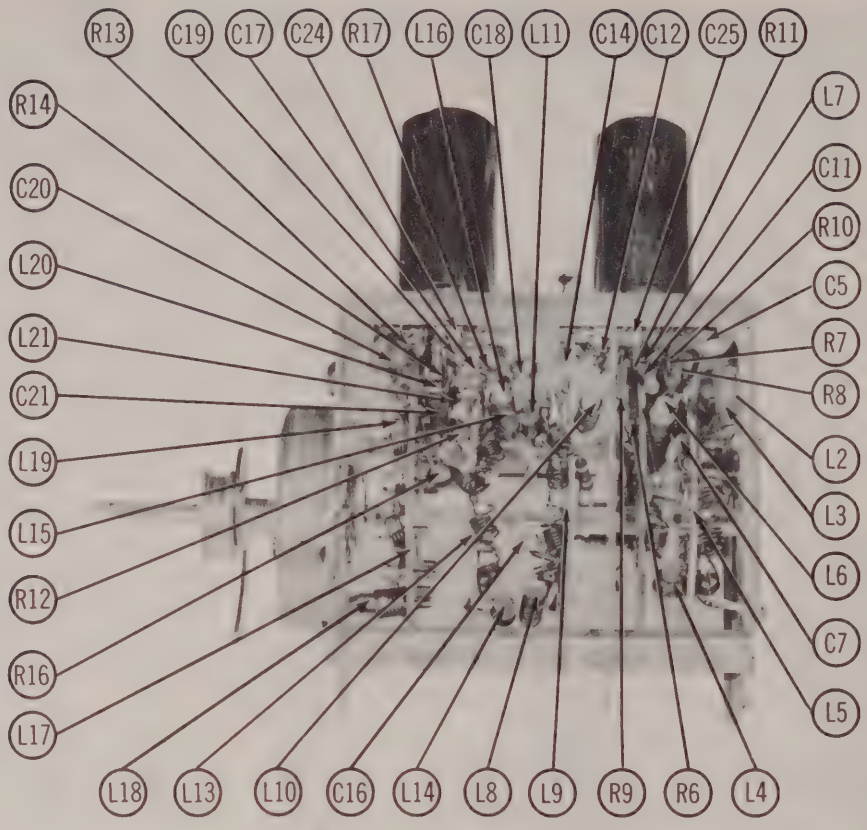
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BQ7A	†3. 8KΩ	250KΩ	INF	. 1Ω	0Ω	INF	■700KΩ	100Ω	0Ω
V 2	6X8	0Ω	470Ω	†22KΩ	. 1Ω	0Ω	0Ω	165KΩ	†16KΩ	†14KΩ
V 3	6CB6	1. 3Meg	56Ω	0Ω	. 1Ω	†7. 2KΩ	†13KΩ	0Ω		
V 4	6CB6	1. 3Meg	56Ω	0Ω	. 1Ω	†7. 2KΩ	†13KΩ	0Ω		
V 5	6CB6	. 1Ω	180Ω	0Ω	. 1Ω	†6. 8KΩ	†14KΩ	0Ω		
V 6	12BY7	700Ω	270KΩ	0Ω	0Ω	0Ω	. 1Ω	†47KΩ	†13KΩ	0Ω
V 7	6AU6	20KΩ	20KΩ	0Ω	. 1Ω	†380Ω	†380Ω	20KΩ		
V 8	6AL5	INF	INF	0Ω	. 1Ω	10KΩ	0Ω	10KΩ		
V 9	6AV6	6. 8Meg	0Ω	0Ω	. 1Ω	INF	INF	†470KΩ		
V 10	6AQ5	470KΩ	500Ω	. 1Ω	0Ω	†1. 7KΩ	†13KΩ	470KΩ		
V 11	6CS6	†■220KΩ	20KΩ	0Ω	. 1Ω	†15KΩ	†7KΩ	1Meg		
V 12	12AU7	†250KΩ	†2. 5Meg	†1. 3Meg	0Ω	0Ω	†18KΩ	†2. 2Meg	†23KΩ	. 1Ω
V 13	12BH7	†6Meg	160KΩ	180KΩ	0Ω	0Ω	♦6KΩ	2. 2Meg	2KΩ	. 1Ω
V 14	12AT7	†12. 1KΩ	†3Meg	1KΩ	0Ω	0Ω	†82KΩ	39KΩ	1KΩ	. 1Ω
V 15	6BQ6GT	INF	0Ω	INF	†15KΩ	1Meg	INF	. 1Ω	0Ω	Top Cap ♦30Ω
V 16	6AX4GT	INF	INF	1Meg	INF	†55Ω	INF	. 1Ω	0Ω	
V 17	1B3GT		PINS	1 - 8	HAVE	INFINITE	RESISTANCE			Top Cap ♦405Ω
V 18	5U4G	INF	30KΩ	INF	24Ω	INF	27Ω	INF	30KΩ	
V 19	17QP4	0Ω	33KΩ	Pin 10 ♦2. 2Meg	Pin 11 †350KΩ	Pin 12 . 1Ω				

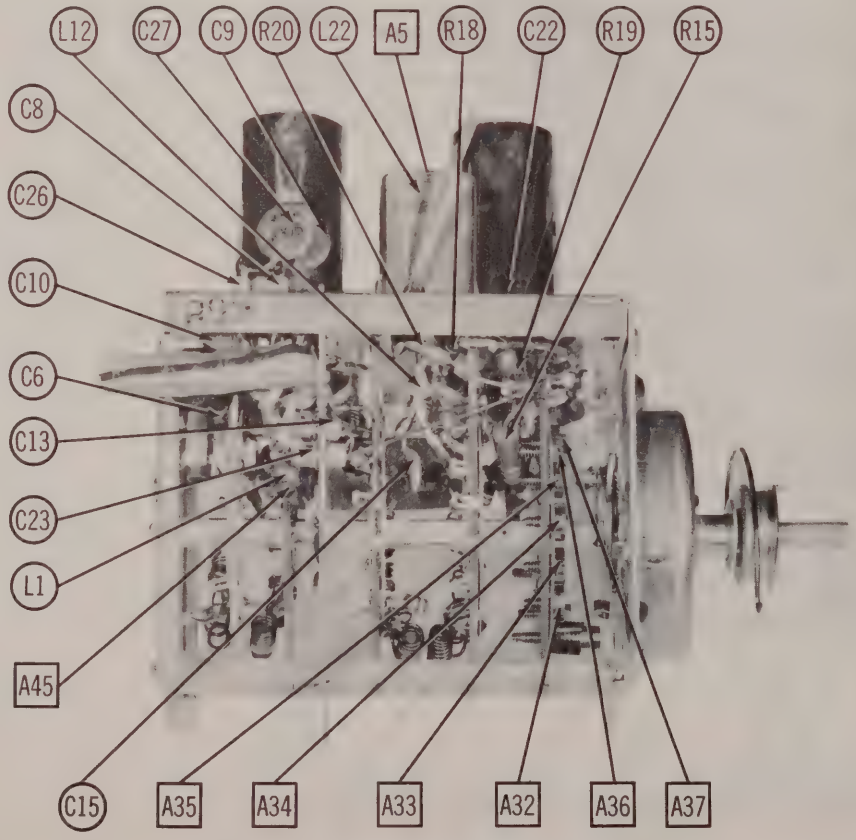
† MEASURED FROM PIN 2 OF V18.
■ MEASURED WITH AGC SWITCH IN "LOCAL" POSITION.
♦ MEASURED FROM PIN 3 OF V16.



TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

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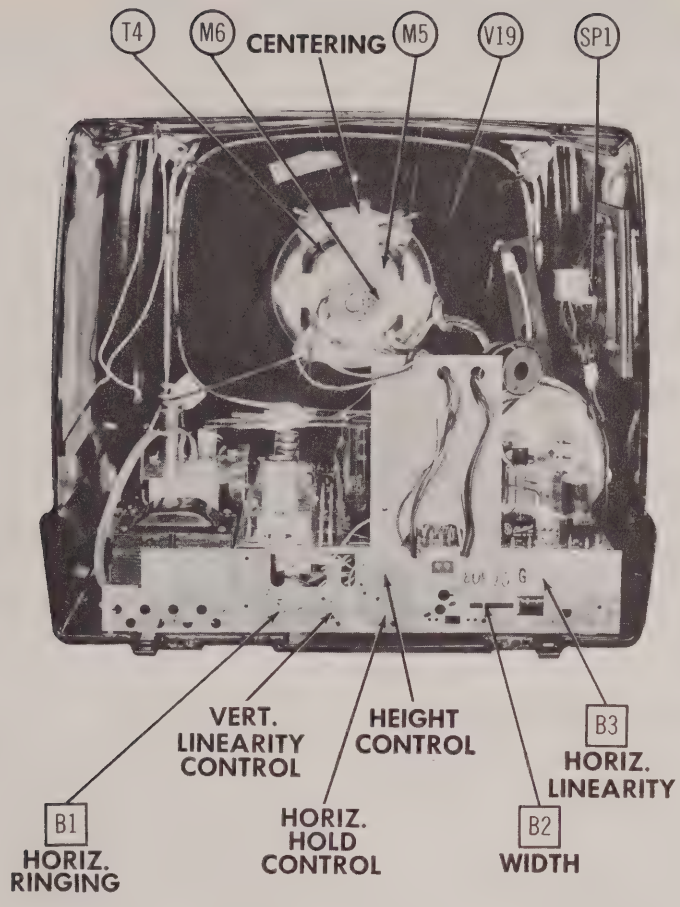


CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

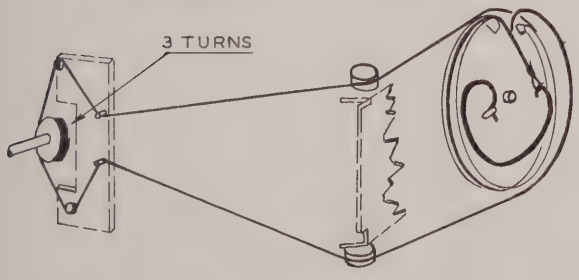
Replace the horizontal output tube (V15) in its socket.

Turn the set on and tune in a TV station, preferably a test pattern.

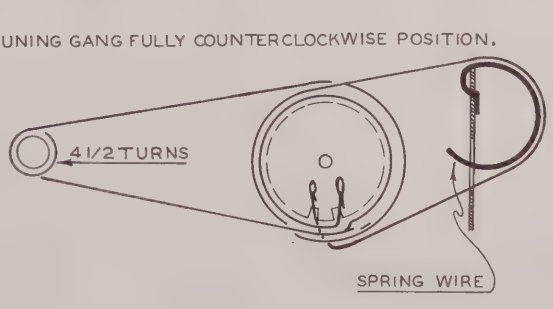
If the picture does not hold sync throughout the complete range of the horizontal hold control, adjust as follows:

1. Replace V12 (12AU7) with a 12AU7 that has pins 1, 2 and 3 clipped off. If a dummy 12AU7 is not available connect a jumper from the center arm of the horizontal hold control to the ungrounded side of C89.
2. Set the horizontal hold control to its mid-range position and adjust the horizontal ringing coil slug (B1) for best sync. Picture will drift slowly from side to side.
3. Turn the horizontal hold control clockwise and note the number of diagonal bars present on the screen. Turn the horizontal hold control fully counter clockwise and again note the number of diagonal bars is the same at both extreme settings of the horizontal hold control.
4. Replace the original 12AU7 in its socket or remove the jumper from the horizontal hold control to C89.

Simultaneously adjust the width coil (B2) and the horizontal linearity coil (B3) until the picture is symmetrical from left to right. The picture should be slightly wider than necessary to fill the picture mask horizontally.



UHF TUNING



VHF FINE TUNING

DRIVE CORD STRINGING

SET 265 FOLDER 6

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V15, V16 and V18. Check R102 , R99, C94, C95, T2, T4A and other associated components. Check adjustments B2 and B3.

DRIVE LINES

Check by substitution V15 and V16. Check adjustments B2 and B3. Check C95, R102 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V15 and V16. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V14, V15 and V16. Check C90 for open. Check C92, L38, R95 and other associated components.

XMAS TREE EFFECT

Check by substitution V14, V15 and V16. Check T2, T4A for internal arcing. Check L38, C92, C93, C91, R96, R98 and other associated components.

VERTICAL

LOSS OF SWEEP

Substitute V13. Check waveform W7.

If Satisfactory	If Unsatisfactory
Check T3, T4B, R109, C3, C2 and other associated components.	Check C83, C81, R81, R2A and other associated components.

INSUFFICIENT SWEEP

Substitute V13. Check height and vertical linearity controls for proper operation. Check T3 and T5A.

COMPRESSED AT BOTTOM

Substitute V13. Check R5, R80, C83 and other associated components.

COMPRESSED AT TOP

Substitute V13. Check R84, R3, C85 and other associated components.

FOLDS

Substitute V13. Check C84, R83, R84, R3 and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V11 and V12. Check C72, C73, C76, R72, R70, R71 and other associated components.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Check by substitution V12A and V13. Check the vertical integrator network. Check R2A, R79, C82 and other associated components.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V12 and V14. Check C86, C87, L38, C92 and other components associated with V14.

HORIZONTAL BENDING

Check by substitution V11, V12 and V14. Check horizontal AFC network.

VIDEO

LOSS OF VIDEO

Substitute V6. Check C55, C52, R44, L35, L33 and other associated components.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check adjustment A2. Check video IF alignment.

POOR CONTRAST

Substitute V6. Check video crystal detector network. Check contrast control and picture tube. Check L30, L31, C51 and other associated components.

NEGATIVE PICTURE

Substitute V6. Check video detector network. Check picture tube. Check C55, C51, L33 and other associated components.

SMEAR

Substitute V6. Check L29, L30, L31, L33, C55 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V1, V3, V4, V5 and V6 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V7, V8, V9 and V10. Check stages V9 and V10 using audio signal generator. Apply audio signal across R18.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF stages for component failure or change of value.	Check C66, C68, C70, C71, R59, R61, T7, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustment A10 and C4. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, substitute V18. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Substitute V18. Check B+ filter and decoupling network.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amp.	6BQ7A	6BQ7A	9AJ	
V2	Mixer - Osc.	6X8	6X8	9AK	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd Video IF Amp.	6CB6	6CB6	7CM	
V6	Video Output	12BY7	12BY7	9BF	
V7	Sound IF Amp.	6AU6	6AU6	7BK	
V8	Ratio Detector	6AL5	6AL5	6BT	
V9	AF Amp.	6AV6	6AV6	7BT	
V10	Audio Output	6AQ5	6AQ5	7BZ	
V11	Sync Sep.	6CS6	6CS6	7CH	
V12	Sync Phase Inv. - Horiz. AFC	12AU7	12AU7	9A	
V13	Vert. Mult. - Vert. Output	12BH7	12BH7	9A	
V14	Horiz. Mult.	12AT7	12AT7	9A	
V15	Horiz. Output	6BQ6GT	6BQ6GT	6AM	6BQ6GA used in later versions.
V16	Damper	6AX4GT	6AX4GT	4CG	
V17	HV Rect.	1B3GT	1B3GT	3C	
V18	LV Rect.	5U4G	5U4G	5T	

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CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: General Electric PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V19	17QP4	17QP4	17QP4	17QP4	17QP4	12N	① Circuit change necessary
	21ZP4A	21ZP4A	21ZP4A	21ZP4A	21ZP4A	12N	
	21ZP4B	21ZP4B	21ZP4B	21ZP4B	21ZP4B	12N	
				21ZP4 ①		12D	
	21ARP4						

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▪60	350	RCE-173	AFH3-29				FP378	TVL-3640	
B	▬80	350		PRS450/40-40				TC68	TVA-1716	
C	▲20	350								
D	40	300								
C2	20	300	RCE-175	PRS450/20		BR2035		TC65	TVA-1608	
C3	20	300	RCE-175	PRS450/20		BR2035		TC65	TVA-1608	
C4	5	50	RCE-174	PRS150/4		BR550		TC30	TVA-1303	
C5	5		RCW-3146	SI5NP0	TCZ-4.7	Z011	NP0K-050	ZT-555	5TCCB-V47	
C6	10		RCW-3144	SI10	D6-100	G018	GP1K-100	UC-541	5GA-Q1	
C7	47		RCW-3145	BPD-000047	D6-470	G033	801-470	UC-5447	5GA-Q47	
C8	1000		RCW-3095	EF-001	MFT-1000				503C-D1	
C9	5000		RCW-3015	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C10	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C11	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C12	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C13	1000		RCW-3095	EF-001	MFT-1000				503C-D1	
C14	.5-3		RCY-080		829-3		3115-01-0R5	CT565A		
C15	150		RCW-3148	BPD-00015	D6-151	G046	GP2K-151	UC-5315	5GA-T15	
C16	2.2		RCW-3147	SI2.2NP0	TCZ-2.2	Z006	NP0K-2R2		5TCCB-V22	
C17	47		RCW-3145	BPD-000047	D6-470	G033	801-470	UC-5447	5GA-Q47	
C18	.5-3		RCY-080		829-3		3115-01-0R5	CT565A		
C19	.82									
C20	5		RCW-3151							
C21	22		RCW-3150							
C22	1000		RCW-3095	EF-001	MFT-1000				503C-D1	
C23	1000		RCW-3095	EF-001	MFT-1000				503C-D1	
C24	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C25	1000		RCW-3095	EF-001	MFT-1000				503C-D1	
C26	1000		RCW-3095	EF-001	MFT-1000				503C-D1	
C27	5000		RCW-3015	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C28	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C29	.1	200	UCC-013	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C30	12	500		1469-120		22R5Q12				
C31	.047	200	UCC-011	P288-047	DF-503	CUB2S47		PT4147	2TM-S47	
C32	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C33	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C34	680		RCW-3051	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C35	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C36	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C37	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C38	680		RCW-3051	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C39	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C40	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C41	470			SI470	D6-471		GP2K-471	UC-5347	5GA-T47	
C42	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C43	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C44	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C45	5		RCW-3113	SI5NP0	TCZ-4.7	Z011	NP0K-050	ZT-555	5TCCB-V47	
C46	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C47	.047	200	UCC-011	P288-047	DF-503	CUB2S47		PT4147	2TM-S47	
C48	5		RCW-3113	SI5NP0	TCZ-4.7	Z011	NP0K-050	ZT-555	5TCCB-V47	
C49	5		UCG-1005	SI5NP0	TCZ-4.7	Z011	NP0K-050	ZT-555	5TCCB-V47	
C50	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C51	.05	200	RCC-105	P288-05	DF-503	CUB6S5		PT615	6TM-S5	
C52	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C53	800		RCW-3037	BPD-0008	DD-801	K069	801-001	DC-521	5HK-D1	
C54	68	500	UCG-2024	1469-680		22R5Q68			MS-47	
C55	.1	600	RCN-031	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C56	.01	1000	RCN-030	P1088-01	DD16-103	CUB16S1		PT1611	MB-S1	
C57	.022	1000	RCN-050	P1088-022		CUB16S22		PT16122	MB-S22	
C58	.01	1000	RCN-030	P1088-01	DD16-103	CUB16S1		PT1611	MB-S1	
C59	3.3	500								
C60	20	500	RCG-001	1469-200		22R5Q2			MS-42	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C61	5000		RCW-3014	BPD-005	DD-502	K060	811-005	DC-535	5HK-D5	
C62	5000		RCW-3014	BPD-005	DD-502	K060	811-005	DC-535	5HK-D5	
C63	10000		RCW-3054	BPD-01	DD-103	K062	811-01	DC-541	5HK-S1	
C64	.001	600	RCC-119	P688-001	DS-102	CUBS5D1	GP2L-102	PT631	6TM-D1	
C65	.004	200	UCC-004	P688-004	DS-402	CUBS2A4	GP2-333-402	PT634	6TM-D4	
C66	10000		RCW-3054	BPD-01	DD-103	K062	811-01	DC-541	5HK-S1	
C67	.01	600	RCN-025	P688-01	DS-103	CUBS6S1	GP2-333-103	PT631	6TM-S1	Note 1
C68	5000		RCW-3014	BPD-005	DD-502	K060	811-005	DC-535	5HK-D5	
C69	800		RCW-3027	BPD-0008	DD-801	K069	801-001	DC-531	5HK-D1	
C70	.01	600	RCC-040	P688-01	DS-103	CUBS6S1	GP2-333-103	PT631	6TM-S1	
C71	.0022	1000	RCC-066	P1068-0022		PT18S22	MS-S22			
C72	.05	600	UCC-043	P688-05	DF-503	CUBS6S5		PT615	6TM-S5	
C73	.1	600	RCN-031	P688-1	DF-104	CUBS6P1		PT691	6TM-P1	
C74	470	500	RCU-315	1468-471	DS-471	SW1547	GP2K-471	MC2415	1FM-35	
C75	22	500		1469-220		22R5G22		MC5220	MS-42	
C76	.005	600	UCC-039	P688-005	DS-502	CUBS6D5	GP2-333-502	PT625	6TM-D5	
C77	.0047	600	RCN-041	P688-0047	DS-472	CUBS6D47	GP2-333-472	PT6247	6TM-D47	
C78	.01	600	RCN-025	P688-01	DS-103	CUBS6S1	GP2-333-103	PT631	6TM-S1	
C79	.0022	600	RCN-060	P688-0022	DS-222	CUBS6D22	GP2-333-222	PT6222	6TM-D22	
C80	.001	600	RCN-063	1464-103		1R5D1		MCB255	MS-31	
C81	470	1000	RCU-337							
C82	.1	200	UCC-013	P288-1	DF-104	CUB2P1		PT491	3TM-P1	
C83	.022	600	RCN-050	P688-022	DF-203	CUBS6S22	S17-02	PT6122	6TM-S22	
C84	.022	600	RCN-050	P688-022	DF-203	CUBS6S22	S17-02	PT6123	6TM-S22	
C85	.5	300	RCC-018	P288-5		CUB2P5		PT605	3TM-P5	
C86	180	500		1469-181		22R5T18				
C87	750	500	UCG-3049	1468-751		5R5T75				
C88	1100	1000	RCU-317	1464-112		1R5D12				
C89	.0012	600	RCC-115	1464-122		1R5D12				
C90	1000	500	RCU-310	1464-102		1R5D2		MCB457	MS-22	
C91	.02	600	RCN-050	P688-02	DF-203	CUBS6S2	S17-03	PT613	6TM-S2	
C92	.0047	600	RCN-053	1464-472		1R5D47			MS-25	
C93	510	500	UCG-3045	1469-511		5R5T51				
C94	620	500	RCU-316	1469-621		5R5T62				
C95	.01	600	RCN-063	P688-01	DS-103	CUBS6S1	GP2-333-103	PT631	6TM-S1	
C96	.05	600	UCC-048	P688-05	DF-503	CUBS6S5		PT615	6TM-S5	
C97	800		RCW-3027	BPD-0008	DD-801	K069	801-001	DC-531	5HK-D1	
C98	.068	600	RCN-066	P688-068		P2S68				
C99	.01	600	RCN-063	P688-01	DS-103	CUBS6S1	GP2-333-103	PT631	6TM-S1	
C100	240	3000	RCW-3101					PT615	6TM-S5	
C101	.05	800	UCC-048	P688-05	DF-503	CUBS6S5		PT615	6TM-S5	
C102	800		RCW-3027	BPD-0008	DD-801	K069	801-001	DC-531	5HK-D1	Note 1
C103	800		RCW-3027	BPD-0008	DD-801	K069	801-001	DC-531	5HK-D1	

Note 1. Used on console models only.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA General Electric PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	750Ω	½	RRC-250	*QJ-594	RTV-488	F3-2	UF15R	Contrast-Panel
B	500KΩ					R2-43	UB15A ††	Volume-Rear
C	Switch					KB-1	UB36	Attach to R1B
R2A	100KΩ	½	RRC-252	**QJ-593	RTV-487	F1-31	UE1180	Vert. Hold-Panel
B	150KΩ					R2-33		Brightness-Rear
R3A	2000Ω	½	RRC-246	QJ1-110	A47-2000-S	AB-5	EU6	Vert. Linearity
B	Shaft		Not Req.	Not Req.	KSS-3	AK-1	Not Req.	Attach to R3A
R4A	100KΩ	½	RRC-247	QJ1-128	A47-100K-S	AB-40	EU41	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-1	Not Req.	Attach to R4A
R5A	3Meg	½	RRC-246	QJ1-140	A47-3Meg-S	AB-54	EU56	Height
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R5A

† Universal Replacement (Mallory exact duplicate part no. UE36).
* CONCENTRIKIT EQUIVALENT KIT K-2 BASE ELEMENTS & SHAFTS B17-105 & P1-121 (PANEL)
B13-133 & R2-216 (REAR)
SWITCH 76-1
** CONCENTRIKIT EQUIVALENT KIT K-2 BASE ELEMENTS & SHAFTS B11-128 & P1-14 (PANEL)
B11-129 & R3-209 (REAR)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA General Electric PART No.	IRC PART No.	NOTES
R6	47KΩ	½	URD-089	BTS-47K	
R7	22KΩ	½	URD-081	BTS-22K	
R8	100Ω	½	URD-025	BTS-100	
R9	820KΩ	½	URD-119	BTS-820K	
R10	470KΩ	½	URD-113	BTS-470K	
R11	470Ω	½	URD-041	BTS-470	
R12	390Ω	½	URD-039	BTS-390	
R13	470Ω	½		BTS-470	
R14	1500Ω	½		BTS-1500	
R15	6800Ω	1		BTA-6800	
R16	47KΩ	½	URD-089	BTS-47K	
R17	15KΩ	½	URD-077	BTS-15K	
R18	150KΩ	½	URD-101	BTS-150K	
R19	4700Ω	½	URD-065	BTS-4700	
R20	1200Ω	½		BTS-1200	
R21	18Ω	½	URD-007	BTS-18	
R22	10KΩ	½	URD-073	BTS-10K	
R23	56Ω	½	URD-019	BTS-56	
R24	1000Ω	½	URD-049	BTS-1000	
R25	3300Ω	1	URE-081	BTA-3300	
R26	2.7Meg	½	URD-131	BTS-2.7Meg	
R27	1Meg	½		BTS-1Meg	
R28	22KΩ	½	URD-085	BTS-22K	
R29	56Ω	½	URD-019	BTS-56	
R30	1000Ω	½	URD-049	BTS-1000	
R31	3300Ω	1	URE-081	BTA-3300	
R32	3900Ω	2	URF-083	BTS-3900	
R33	330Ω	½	URD-037	BTS-330	
R34	470KΩ	½	URD-113	BTS-470K	
R35	180Ω	½	URD-033	BTS-180	
R36	1000Ω	½	URD-049	BTS-1000	
R37	6800Ω	1	URE-089	BTA-6800	
R38	47KΩ	½	URD-089	BTS-47K	
R39	470KΩ	½	URD-113	BTS-470K	
R40	470KΩ	½	URD-113	BTS-470K	
R41	3300Ω	½	URD-081	BTS-3300	
R42	270KΩ	½	URD-107	BTS-270K	
R43	15Ω	½	URD-005	BTS-15	
R44	40000Ω	5		RRW-053	
R45	10KΩ	½			BTS-10K
R46	270KΩ	½	URD-107		BTS-270K
R47	33KΩ	½	URD-085		BTS-33K
R48	4700Ω	½	URD-065		BTS-4700
R49	2.2Meg	½	URD-129		BTS-2.2Meg
R50	1000Ω	½	URD-049		BTS-1000
R51	180Ω	½	URD-033		BTS-180
R52	470Ω	½	URD-041		BTS-470
R53	330Ω	½	URD-037		BTS-330
R54	22KΩ	½			BTS-22K
R55	10KΩ 6%	½	URD-1073		BTS-10K 5%

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA General Electric PART No.	IRC PART No.	NOTES
R56	10KΩ 5%	½	URD-1073	BTS-10K 5%	
R57	33KΩ	½	URD-085	BTS-33K	Note 2
R58	6.8Meg	½	URD-141	BTS-6.8Meg	
R59	470KΩ	½	URD-113	BTS-470K	
R60	470KΩ	½	URD-113	BTS-470K	
R61	5050 5%	½	URD-1043	BTS-5050 5%	
R62	1Meg	½		BTS-1Meg	
R63	33KΩ	½	URD-085	BTS-33K	
R64	220KΩ	½	URD-105	BTS-220K	
R65	820KΩ	½	URD-119	BTS-820K	
R66	10Meg	½	URD-145	BTS-10Meg	
R67	300KΩ	½		BTS-300K	
R68	1Meg	½	URD-121	BTS-1Meg	
R69	6250Ω 5%	½	URD-1044	BTS-6250 5%	
R70	16KΩ	2	URF-1078	BTS-16K	
R71	12KΩ	2	URF-075	BTS-12K	
R72	15KΩ	2	URD-077	BTS-15K	
R73	2.2Meg	½	URD-129	BTS-2.2Meg	
R74	10KΩ	½	URD-073	BTS-10K	
R75	18KΩ	½	URD-079	BTS-18K	
R76	47KΩ	½	URD-089	BTS-47K	
R77	33KΩ	½	URD-085	BTS-33K	
R78	82KΩ	½	URD-095	BTS-82K	
R79	100KΩ	½	URD-097	BTS-100K	Note 3
R80	5.6Meg	½	URD-139	BTS-5.6Meg	
R81	220KΩ	½	URD-185	BTS-220K	
R82	2.2Meg	½	URD-129	BTS-2.2Meg	
R83	4700Ω	½	URD-065	BTS-4700	
R84	1000Ω	½	URD-049	BTS-1000	
R85	1Meg	½	URD-121	BTS-1Meg	
R86	1Meg	½	URD-121	BTS-1Meg	
R87	330Ω	½	URD-057	BTS-2200	
R88	2200Ω	½	URD-057	BTS-2200	
R89	3600Ω	½	URD-1063	BTS-3600	
R90	910KΩ	½	URD-1120	BTS-910K	
R91	910KΩ	½	URD-1120	BTS-910K	
R92	150KΩ	½	URD-101	BTS-150K	
R93	470KΩ	½	URD-113	BTS-470K	
R94	120KΩ	½	URD-099	BTS-150K	
R95	1000Ω	½	URD-049	BTS-1000	
R96	12KΩ	½	URD-075	BTS-12K	
R97	39KΩ	½	URD-087	BTS-39K	
R98	82KΩ	½	URD-095	BTS-82K	
R99	12KΩ	½	URD-075	BTS-12K	
R100	1Meg	½	URD-121	BTS-1Meg	
R101	330Ω	½	URD-037	BTS-330	
R102	165Ω 5%	2	URF-1077	BTS-165 5%	
R103	470KΩ	1	URE-113	BTA-470K	
R104	470KΩ	1	URE-113	BTA-470K	
R105	1.3Meg	½	URD-123	BTS-1.3Meg	
R106	8.2Ω	½	RRW-105		
R107	3300Ω	½	URD-057	BTS-3300	
R108	6800Ω	2	URF-088	BTS-6800	
R109	4700Ω	2	URF-085	BTS-4700	
R110	330Ω	½	URD-037	BTS-330	
R111	34KΩ	2		BTS-34K	Note 2
R112	3300Ω	1	URE-081	BTA-3300	
R113	1000Ω	1	URE-049	BTA-1000	
R114	1000Ω	2	URF-081	BTS-1000	

Note 1: Some models may use a 4700Ω in this application.
Note 2: Not used in all versions.
Note 3: Some models may use a 82KΩ in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI	SEC 1	SEC 2	SEC 3	SEC 4	SEC 5	REPLACEMENT DATA General Electric PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC	504VCT @ 1.5A	.220A	5VAC @ 3A			RTP-3181					P9733	
				6.3VAC @ 3A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA General Electric PART No.	Halldorson PART No.	Merit PART No.	RCA PART No.	Ram PART No.	Stancor TYPE No.	Thordarson PART No.	Triad PART No.
T2	Horiz. Output Trans.	RTO-149-1 RTO-149 ①							
T3	Vert. Output Trans.	RTO-154	Z1806	A-3039		V313	A-5141	26S54	A-109X ②
T4A	Yoke-Horiz. (12MHz)	RLD-052 ④	RF800 ⑤⑦	MWC-1 ⑥	20LR3	30LR16	WC-5 ⑤⑦	WC-18 ⑤	WC-12 ⑤
B	Vert. (40MH)								
T5	Horiz. Lin. Coil (4.5-17MH)	RLD-060							
T6A	Width Coils (.17-.4 6MH)	RLD-056							
B	(1.1-5.5MH)								

① Alternate horizontal output transformer.
② Connect as auto transformer.
③ Horizontal windings parallel connected.
④ Includes resistors R87 and R88.
⑤ Enlarge mounting hole.
⑥ Connect to coded red and blue terms.
⑦ Connect to terms #1 and #2.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI	SEC	REPLACEMENT DATA General Electric PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T7	4.8KΩ	3.7Ω	RTO-156	A-3237	A-3019	S-5Z	Z1003	26S49	

SPEAKER

ITEM No.	RATINGS SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA General Electric PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	5-1/4"	PM	3.7Ω	S-527-D7	ST-803 Mod. P525-V	52A1	① Used in console models.
	8"	PM	3.7Ω	S-825G-7 ①	ST-115 Mod.P8-V	8A21	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA General Electric PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	UHF Input Coil	0Ω	0Ω	RSX-045				Part of complete wafer assembly.
L2	VHF Ant. Trap	.3Ω	.1Ω	RLA-042				
L3	VHF IF Trap	.3Ω		RLI-248				
L4	VHF Ant. Coil	0Ω		RSX-046				Channel 8 position; part of complete wafer assembly
L5	VHF Ant. Coils	0Ω		RSX-046				Channel 13 position; part of complete wafer assembly
L6	VHF Ant. Coil	0Ω		RSX-046				
L7	VHF Neut. Coil	0Ω		RLI-289				Channel 8 position; part of complete wafer assembly
L8	VHF RF Coil	0Ω		RSX-044				
L9	VHF RF Coils	0Ω		RSX-044				Channel 13 position; part of complete wafer assembly
L10	UHF RF Coil	0Ω		RSX-044				
L11	UHF RF Coil	0Ω		RSX-044				URF position; part of complete wafer assembly
L12	Hi-Band Coupling	0Ω		RSX-043				
L13	VHF Mixer Grid Coils	0Ω		RSX-043				Channel 8 position; part of complete wafer assembly
L14	VHF Mixer Grid Coil	0Ω		RSX-043				Channel 13 position; part of complete wafer assembly
L15	UHF Mixer Grid Coil	0Ω		RSX-043				Part of complete wafer assembly
L16	VHF Mixer Grid Coil	0Ω		RSX-043				Channel 13 position; part of complete wafer assembly
L17	VHF Osc. Coils	0Ω		RSX-042				Channel 8 position; part of complete wafer assembly
L18	VHF Osc. Coil	0Ω		RSX-043				Channel 13 position; part of complete wafer assembly
L19	VHF Osc. Coil	0Ω		RSX-042				
L20	VHF RF Choke	0Ω						
L21	VHF RF Choke	0Ω		RLI-268				
L22	VHF Conv. Plate	.3Ω		RLI-285				
L23	47.25MC trap	1Ω		RLA-246	17-4602 *			
L24	1st Video IF	.1Ω		RLI-192	17-4500 ■		6219 ▲	
L25	2nd Video IF	.1Ω	.1Ω	RTL-153	17-4523		6219	
L26	3rd Video IF	.1Ω	.1Ω	RTL-155	17-4522		6219	
L27	4th Video IF	.1Ω	.1Ω	RLI-269			6219	
L28	Series Peaking Coil	5.2Ω		RLI-136	19-1005		4612	10 Microhenries, IRC part no. CL-1.
L29	Series Peaking Coil	2.1Ω		RLF-024	19-3036	TV-180	6176	31 Microhenries
L30	Shunt Peaking Coil	5.5Ω		RLI-194	19-3300		6155	330 Microhenries
L31	Series Peaking Coil	3.3Ω		RLI-241	19-7068		6172	68 Microhenries
L32	4.5MC trap	1.1Ω		RLI-244	20-1004	TV-151	1469	
L33	Series Peaking Coil	6.5Ω		RLI-245	19-3180 ♦	TV-184 ♦	4644 ♦	150 Microhenries, wound on 12KΩ resistor
L34	Shunt Peaking Coil	8Ω		RLI-220	19-3180	TV-184	6180	180 Microhenries
L35	Shunt Peaking Coil	5.5Ω		RLI-270	19-3300		6155	330 Microhenries
L36	Sound IF	2.2Ω		RLI-243	20-1004	TV-151	1469	
L37	Ratio Det.	3.4Ω	.8Ω	RTD-015	17-3493 †	TV-110 †	1468 †	Includes 220Ω resistor
L38	Ringing coil	63Ω		RLI-247	19-1578 ▲	TV-153 ▲	6210 ▲	
L39	RF Choke	8.2Ω		RLI-138	19-1005		4612	10 Microhenries, IRC part no. CL-1.

* Use trap winding only.
■ Detune trap winding.
▲ Use one winding only.
♦ Parallel with 12KΩ resistor.
† Drill mounting holes and add 220Ω resistor externally.
△ Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ~/~	REPLACEMENT DATA General Electric PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L40	.220A	54Ω	1HY	RLF-068	C-3227	C-2096 ①	C-33X ①	C-5040	28C44 ①

① Drill one new mounting hole.

CRYSTAL DIODES

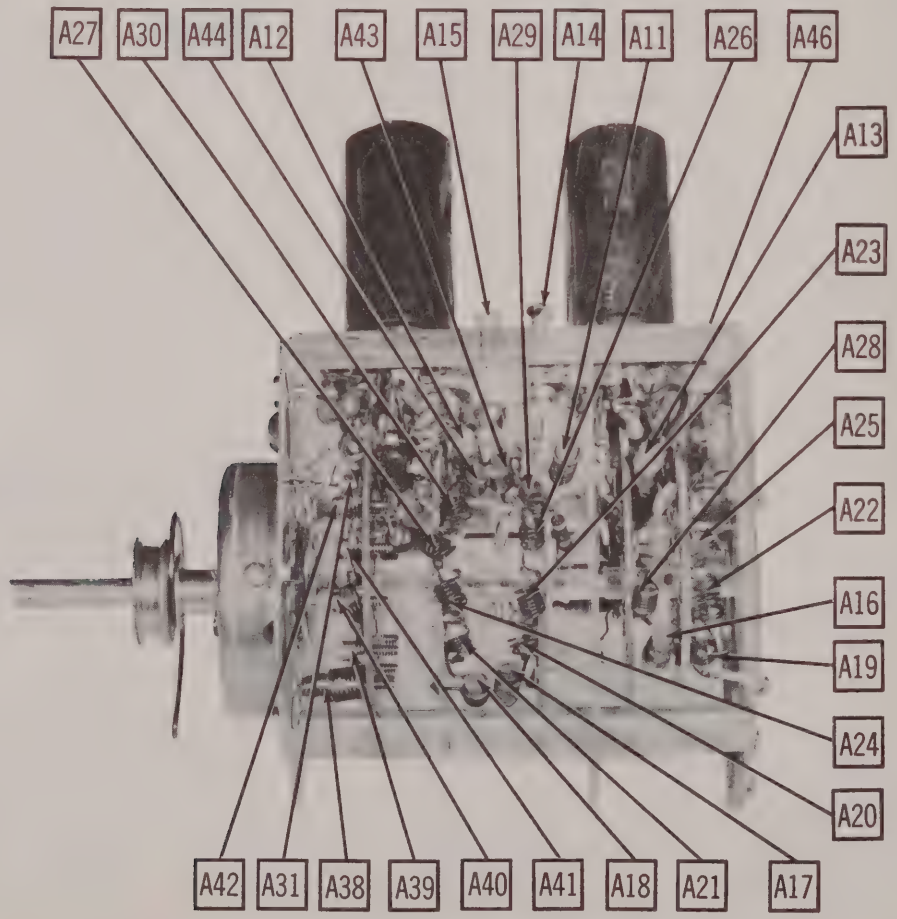
ITEM No.	ORIG. TYPE	REPLACEMENT DATA General Electric PART No.	FEDERAL PART No.	SYLVANIA PART No.	NOTES
M1	1N87G			1N60	Video Det.
M2	1N87G			1N60	AGC Rectifier

GENERAL ELECTRIC
MODELS 17T20, 21C103, 21C104, 21T22, 21T23, 21T24, 21T25

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	General Electric PART No.	NOTES
M3	Tuner	RJX-065	VHF
	Tuner	RUX-001	UHF
M4	Switch	RSW-106	AGC
M5	Focus Magnet	RLF-066	Includes centering device- Models 21T24, 21T24, 21C103 and 21C104
	Focus Magnet	RLF-065	Includes centering device - Models 17T20, 21T22 and 21T23
M6	Ion Trap	RET-013	
	Cabinet	RAU-410	Model 21T22
	Cabinet	RAU-411	Model 21T23
	Cabinet	RAU-412	Model 17T20
	Cabinet	RAV-236	Model 21T24
	Cabinet	RAV-237	Model 21T25
	Cabinet	RAV-242	Model 21C103
	Cabinet	RAV-243	Model 21C104
	Knob	RDK-403	Contrast - Models 17T20, 21T22, 21T23, 21T24 and 21C103
	Knob	RDK-414	Contrast - Models 21T25, 21C104
	Knob	RDK-404	On-Off-Volume - Models 17T20, 21T22, 21T24 and 21C103
	Knob	RDK-413	On-Off-Volume - Models 21T25, 21C104
	Knob	RDK-405	Brightness or UHF Fine Tuning - Models 17T20, 21T22, 21T23, 21T24 and 21C103
	Knob	RDK-416	Brightness or UHF Fine Tuning - Models 21T25, 21C104
	Knob	RDK-406	Vertical or Fine Tuning - Models 17T20, 21T22, 21T24, 21C103 and 21T23
	Knob	RDK-415	Vertical or Fine Tuning - Models 21T25, 21C104
	Knob	RDK-408	VHF Channel Selector - Brown - Models 17T20, 21T22, 21T23, 21T24 and 21C103
	Knob	RDK-419	VHF Channel Selector - Fawn - Models 21T25, 21C104
	Knob	RDK-411	VHF Channel Selector with UHF - Brown - Models 17T20, 21T22, 21T23, 21T24 and 21C103
	Knob	RDK-421	VHF Channel Selector with UHF - Fawn - Models 21T25, and 21C104
	Knob	RDK-423	On-Off-Volume - Model 21T23
	Knob	RDK-434	VHF Channel Selector - Brown - Model 21T23
	Knob	RDK-436	VHF Channel Selector with UHF - Brown - Model 21T23
	Knob	RDK-430	UHF Indicator - Brown - Models 17T20, 21T22, 21T23, 21T24 and 21C103
	Knob	RDK-432	UHF Indicator - Fawn - Models 21T25 and 21C104
	Knob	RDK-442	AGC - Model 21T22
	Knob	RDK-443	AGC - Model 21T23
	Safety Glass	RDW-067	Models 21T24, 21T25, 21C103 and 21C104
	Safety Glass	RDW-070	Model 21T22
	Safety Glass	RDW-071	Model 17T20
	Safety Glass	RDW-074	Model 21T23
	Mask	RDM-049	Models 21T24 and 21C103
	Mask	RDM-050	Models 21T25 and 21C104



RF TUNER ALIGNMENT IDENTIFICATION

PROPERTY OF
L. F.
39
DENVER,

TROUBLE SHOOTING AIDS (cont)

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V14, V15, V16 and V17. Check waveform W14.

If Satisfactory	If Unsatisfactory
Check T2, T4A, T5, T6, C100, C99, C98, C96, R103 and other associated components.	Check L38, C92, C93, C95, R99, R96, R95 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V15, V16 and V18. Check T2, T4A, C98, C95, R102 and other associated components.

BLOOMING

Check by substitution V15, V16, V17 and V18. Check R107, R102, T2 and T4A.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5 and V6. Check video IF components for failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

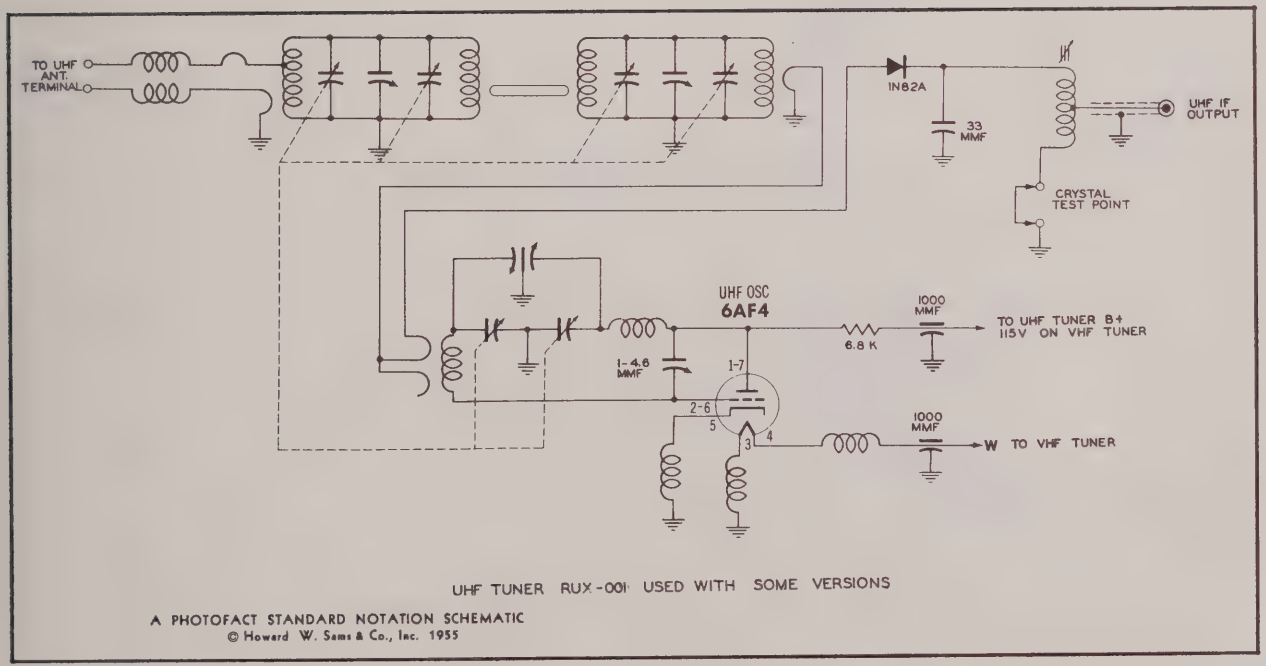
KEYSTONE EFFECT

Check T4 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



UHF TUNER RUX-001 USED WITH SOME VERSIONS

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UHF TUNER SCHEMATIC

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF tuner oscillator circuit may be accomplished by removing the channel selector and fine tuning knobs.

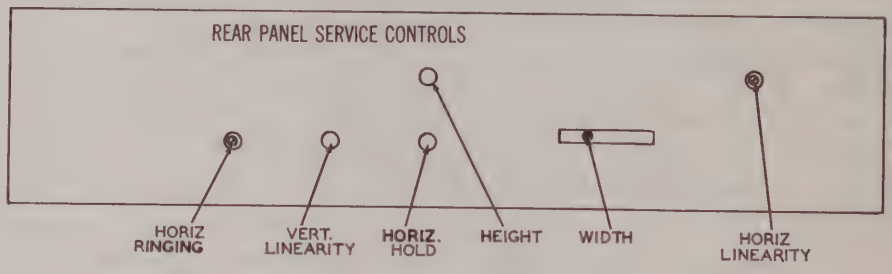
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove 2 hole covers from corner brackets at the two top corners of the safety glass. Remove screws under covers. Remove brackets and safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions).

SERVICE ADJUSTMENT LOCATION



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the horizontal oscillator circuit can be made from the rear panel of the chassis. Set the horizontal hold control at the mid-position of its range and adjust the horizontal ringing coil slug (L38) until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the ratio detector secondary (L37) located on top of chassis. (See tube placement chart).

CENTERING

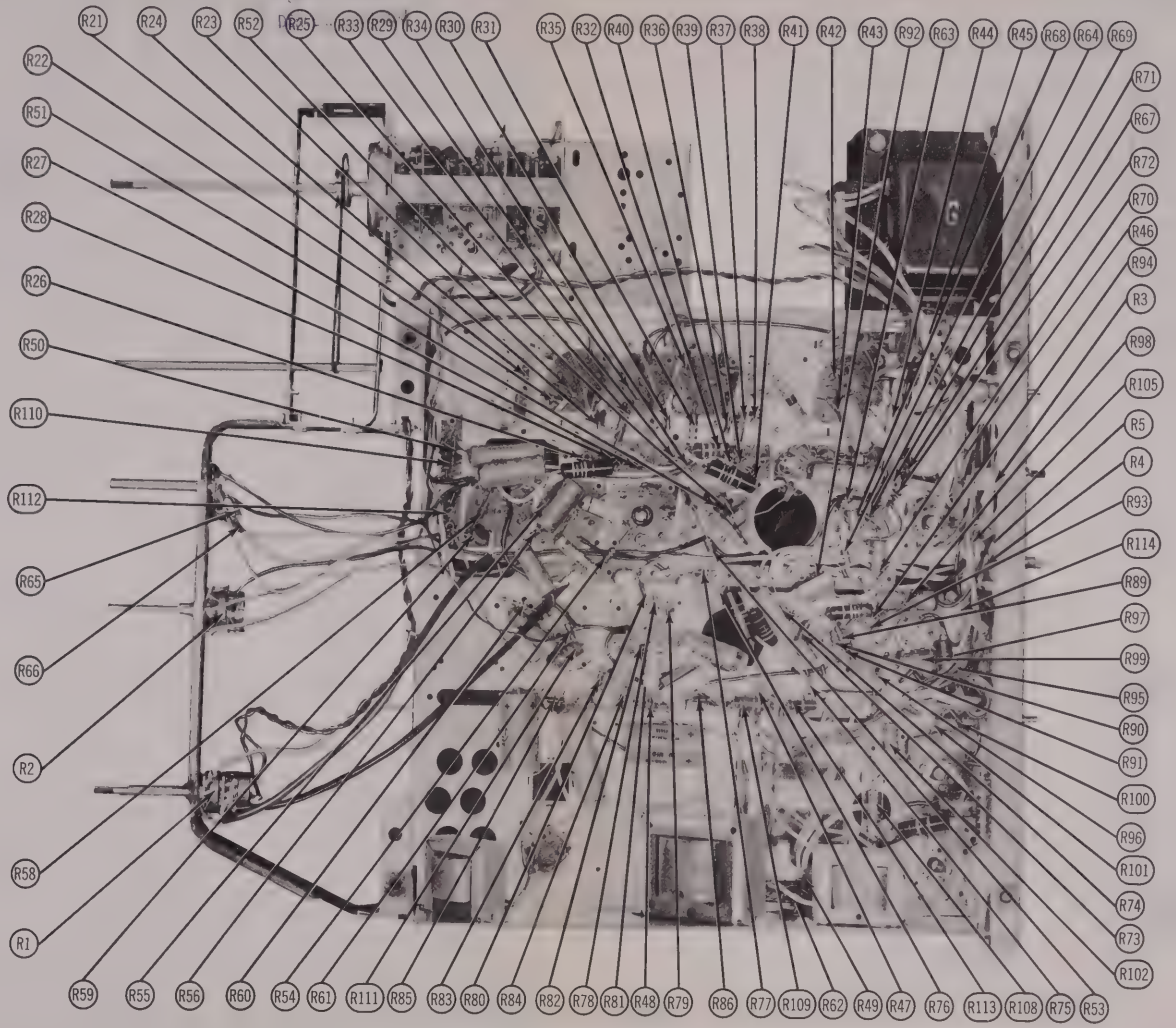
Centering is accomplished mechanically by means of a centering lever on the PM focusing assembly. Adjust the centering lever from side to side, and up and down until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 8 push-on type control knobs from front panel.
2. Remove 2 metal screws and 1 nut from rear cover. Remove rear cover.
3. Remove speaker leads from speaker. Remove 4 nuts from speaker. Remove speaker.
4. Remove HV lead from picture tube. Disconnect deflection yoke socket and picture tube socket.
5. Remove 4 chassis bolts and transformer mounting nut from underside of cabinet. Remove chassis.

PICTURE TUBE REMOVAL

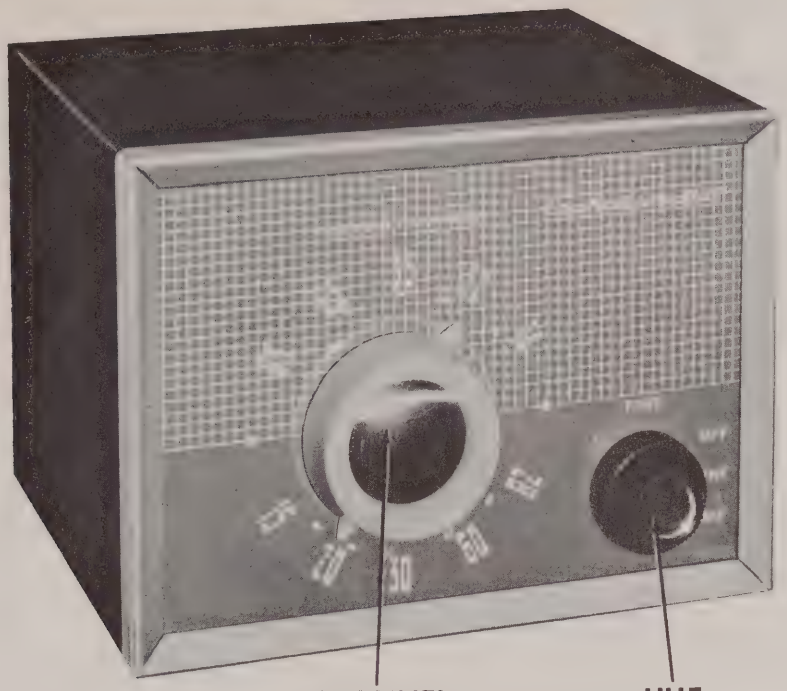
1. Remove chassis.
2. Remove 2 nuts from underside of cabinet.
3. Remove 2 nuts from top front tube mount.
4. Remove tube harness and yoke assembly .
5. Loosen nut located on underside of front tube mounting band.
6. Remove picture tube from harness assembly.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

P
L. I
3324
DENVER, COLORADO

GRANCO
MODEL MTU (UHF Conv.)



GRANCO
MODEL MTU (UHF Conv.)

TRADE NAME	Granco Model MTU
MANUFACTURER	Granco Products, Inc., 36-17 20th Ave., Long Island City 5, N. Y.
TYPE SET	AC Operated All Channel UHF Converter
TUBES (Three)	Types 6AF4 Osc., 6BQ7A IF Amp., 6X4 Rectifier
POWER SUPPLY	110-120 Volts AC RATING .24 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Replacement of the 6AF4 oscillator tube may result in a slight loss of signal strength due to slight misalignment caused by tube replacement.
Two simple methods of aligning the converter are given below. The first method uses a signal generator and the second method uses a UHF TV signal.

ALIGNMENT USING SIGNAL GENERATOR
Set the TV channel selector switch to channel 5 or 6. Choose the channel which is unused. Turn the receiver contrast control fully clockwise. Adjust fine tuning control for minimum adjacent channel interference.
Connect the converter to the TV receiver. Connect the signal generator across the converter's UHF antenna terminals. Adjust signal generator for 890MC, 400∿ modulated. Tune UHF converter to channel 83. Several horizontal black bars should appear on picture tube as generator signal is tuned in. Use only enough generator output to provide usable indication on picture tube.
Adjust A1 and A2 for maximum contrast and minimum noise in bar pattern on scope.
Usually ½ turn in either direction is sufficient. Readjust the signal generator to 470MC and tune converter to 470MC signal (Channel 14).
A sealed adjustment screw is located on top of the antenna, RF and oscillator cavities. Slightly retouch the adjustment screw on the antenna and RF cavities for maximum contrast on minimum noise in bar pattern on scope.
Readjust generator to 800MC and set tuner to channel 69.
Adjust A3 until bar pattern appears on picture tube. Adjust A4 and A5 for maximum contrast and minimum noise in bar pattern.
Repeat adjustments of A3, A4 and A5. Reseal core studs.

ALIGNMENT USING UHF TV SIGNAL
Tune in any UHF TV station between channels 60 and 83 and adjust A1 and A2 for clearest picture and best sound.
Tune in any UHF station between channels 40 and 60 and adjust A3, A4 and A5 for clearest picture and best sound.
Tune in any UHF station between channels 14 and 40 and slightly retouch the adjustment screws on top of the oscillator, RF and mixer cavities for clearest picture and best sound.

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PARTS LIST AND DESCRIPTIONS

GRANCO MODEL MTU

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		GRANCO PART No.	STANDARD REPLACEMENT		
V1	UHF Osc.	6AF4	6AF4	7DK	
V2	UHF IF Amp.	6BQ7A	6BQ7A	9AJ	
V3	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	GRANCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	20	300		PRS450/20-20		BBRD2245		TCD75	TVA-2730	Red
B	20	300								Blue
C2	680			EF-001	MFT-1000				503C-D1	
C3	680			EF-001	MFT-1000				503C-D1	
C4	470			BPD-471	D6-471	K060	811-471	UC-5347	5GA-T47	
C5	100			BPD-101	D6-101	G042	801-101	UC-531	5GA-T3	
C6	470			BPD-471	D6-471	K060	811-471	UC-5347	5GA-T47	
C7	470			BPD-471	D6-471	K060	811-471	UC-5347	5GA-T47	
C8	470			BPD-471	D6-471	K060	811-471	UC-5347	5GA-T47	

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	GRANCO PART No.	IRC PART No.	
R1	56KΩ	2		BTB-56K	
R2	8200Ω	2		BTB-8200	
R3	27Ω	½		BTS-27	
R4	100Ω	½		BTS-100	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	GRANCO PART No.	IRC PART No.	
R5	1Meg	½		BTS-1Meg	
R6	1000Ω	½		BTS-1000	
R7	1000Ω	1		BTA-1000	

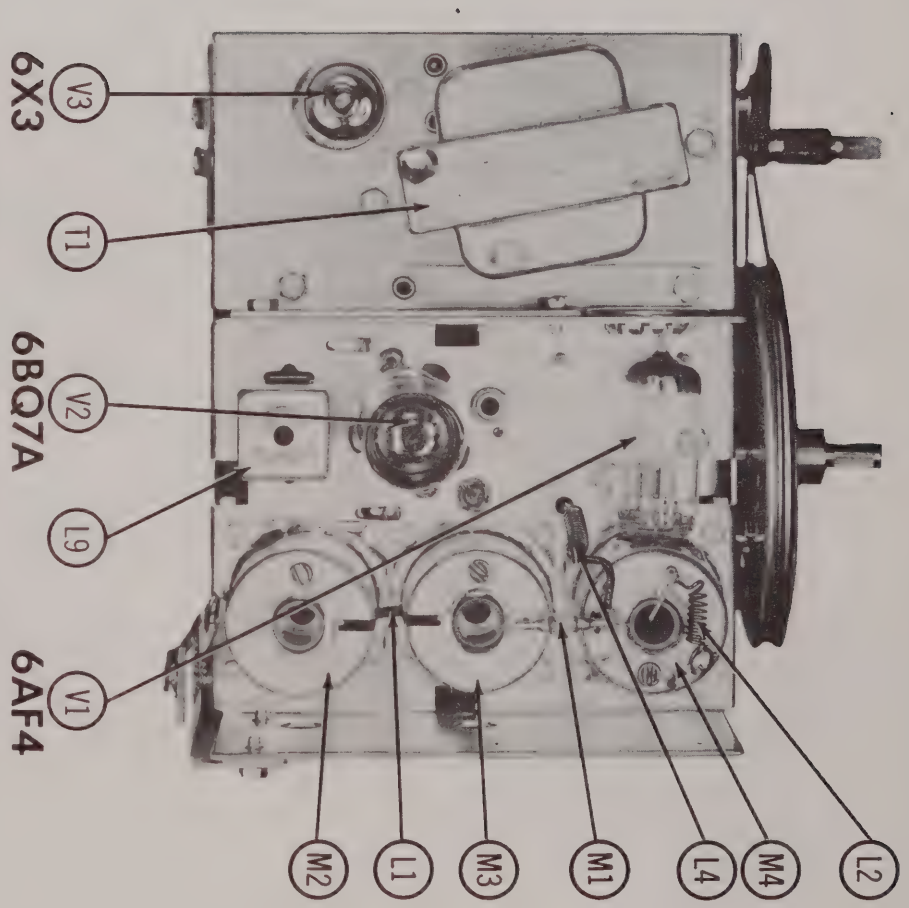
TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	GRANCO PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ .24A	260VAC .024ADC	6.3VAC @ 1.2A							

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	GRANCO PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	UHF RF Coupling	0Ω						
L2	Fil. Choke	0Ω						
L3	Fil. Choke	0Ω						
L4	UHF IF Coupling	0Ω						
L5	UHF IF Input	0Ω						
L6	UHF IF Input Mutual Coil	0Ω						
L7	RF Choke	.1Ω						
L8	Feedback Coil	.1Ω						
L9	UHF IF Output	0Ω	0Ω					Includes capacitors.

CHASSIS—TOP VIEW



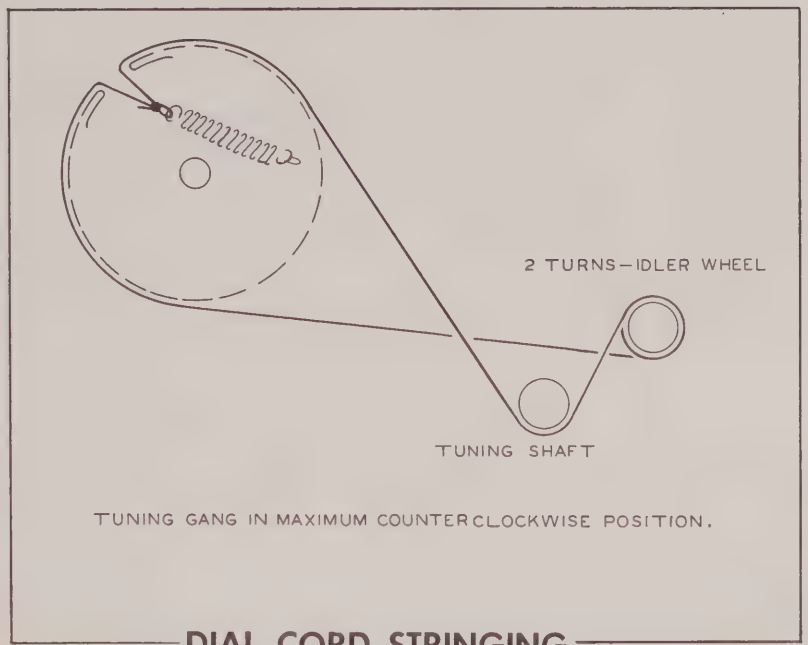
PARTS LIST AND DESCRIPTIONS (Continued)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		GRANCO PART No.	FEDERAL PART No.	SYLVANIA PART No.	
M1	1N82			1N82	UHF Mixer

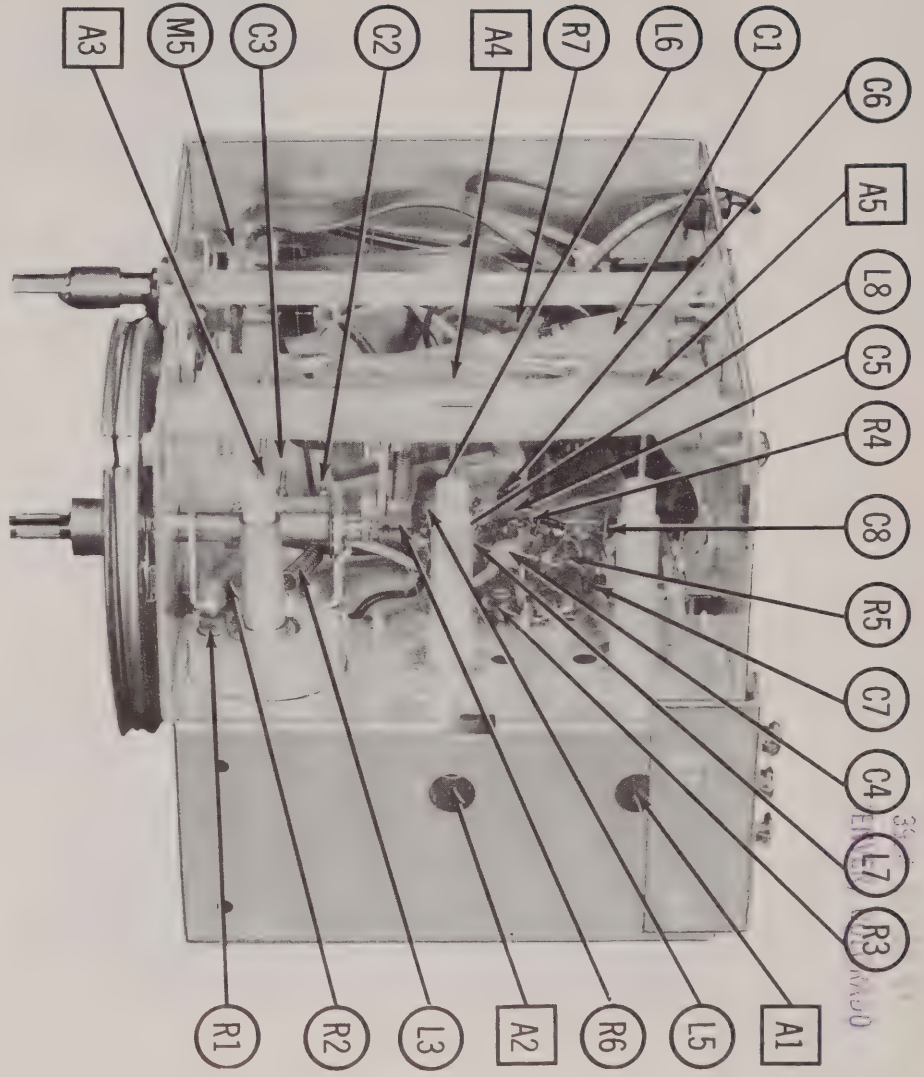
MISCELLANEOUS

ITEM No.	PART NAME	GRANCO PART No.	NOTES
M2	UHF Ant. Coil Assembly		
M3	UHF Mixer Coil Assembly		
M4	UHF Osc. Coil Assembly		
M5	Switch		VHF-UHF

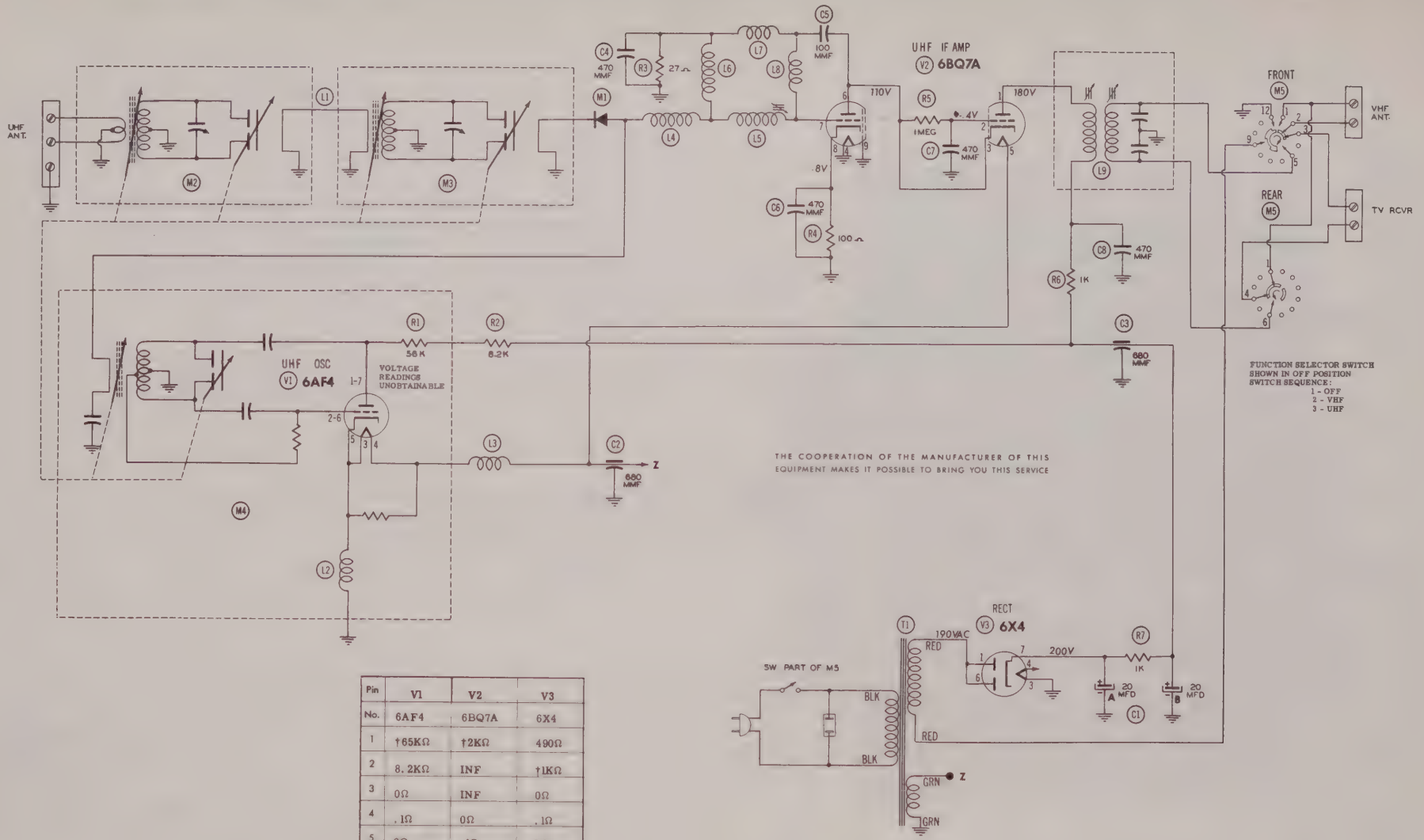


DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



GRANCO MODEL MTU



Pin No.	V1 6AF4	V2 6BQ7A	V3 6X4
1	†65KΩ	†2KΩ	490Ω
2	8.2KΩ	INF	†1KΩ
3	0Ω	INF	0Ω
4	.1Ω	0Ω	.1Ω
5	0Ω	.1Ω	INF
6	8.2KΩ	INF	490Ω
7	†65KΩ	27Ω	200KΩ
8		100Ω	
9		0Ω	

† MEASURED FROM PIN #7 OF V3.
♦ MEASURED FROM PIN #3 OF V2.

1 DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3 Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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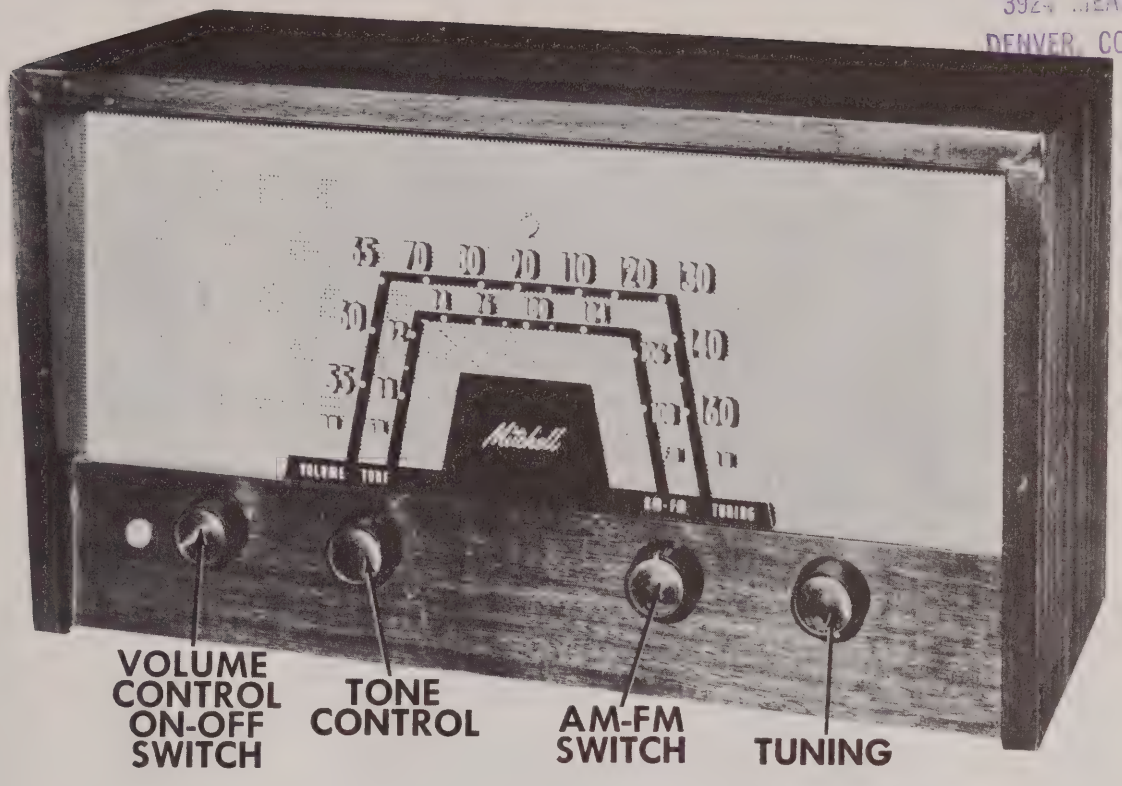
F . . . OF
L. F . . . .NSHIP
39[illegible] MEADE ST.
DENVER, COLORADO

MITCHELL
MODEL 1278



MITCHELL
MODEL 1278

TRADE NAME	Mitchell Model 1278	
MANUFACTURER	Mitchell Mfg. Co., 2525 Clybourn Ave., Chicago 14, Ill.	
TYPE SET	AC-DC Operated AM-FM Superheterodyne Receiver	
TUBES (Six)	Types 12BA6 FM RF Amp., 12BE6 FM Conv.-AM Osc., 12AU6 FM IF Amp-AM Mixer, 12BA6 FM AM IF Amp., 19T8 Ratio Det-AM Det-AVC-AF Amp., 50C5 Output	
POWER SUPPLY	110-120 Volts AC/DC	RATING .29 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	535KC - 1620KC	FM—87MC - 109MC

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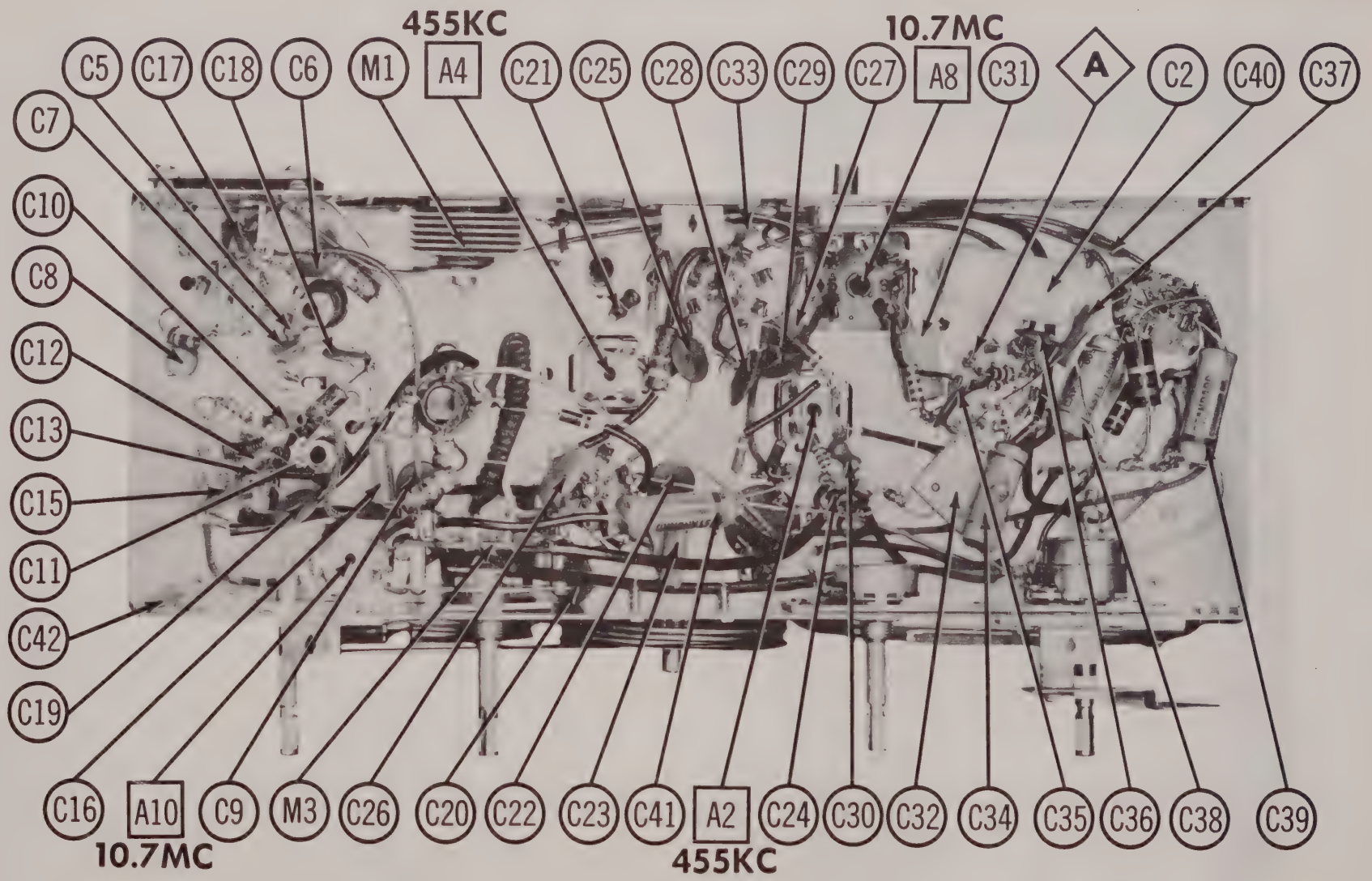
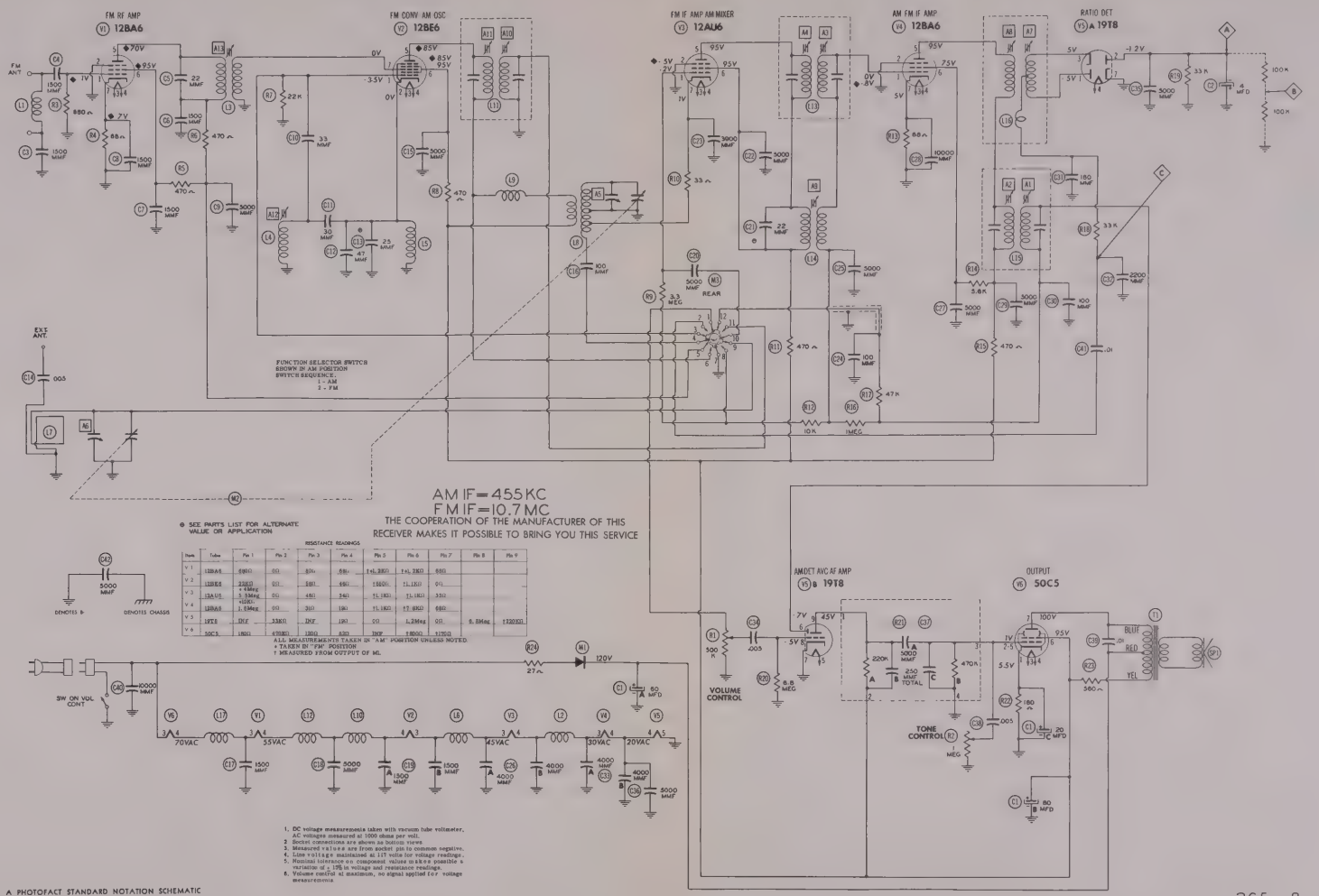


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12BA6	68KΩ	0Ω	82K+	68K+	†4.2MΩ	†4.2MΩ	68Ω		
V 2	12BE6	22KΩ + 4Meg	0Ω	56Ω	68Ω	†660Ω	†1.1KΩ	0Ω		
V 3	12AU6	3.9Meg +22KΩ	0Ω	68Ω	34Ω	†1.1KΩ	†1.1KΩ	33Ω		
V 4	12BA6	1.8Meg	95Ω	26Ω	18Ω	†1.1KΩ	†1.8KΩ	68Ω		
V 5	19T8	DCV	33KΩ	DCV	18Ω	0Ω	4.2Meg	0Ω	8.8Meg	†220KΩ
V 6	50C5	470KΩ	470KΩ	220Ω	62Ω	DCV	280KΩ	475KΩ		

ALL MEASUREMENTS TAKEN IN "AM" POSITION UNLESS NOTED
+ TAKEN IN "FM" POSITION
† MEASURED FROM OUTPUT OF M1.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. AC voltages measured at 1000 ohms per volt.
3. Socket connections are shown as bottom views.
4. Measured values are from socket pin to common negative.
5. Line voltage maintained at 117 volts for voltage readings.
6. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
8. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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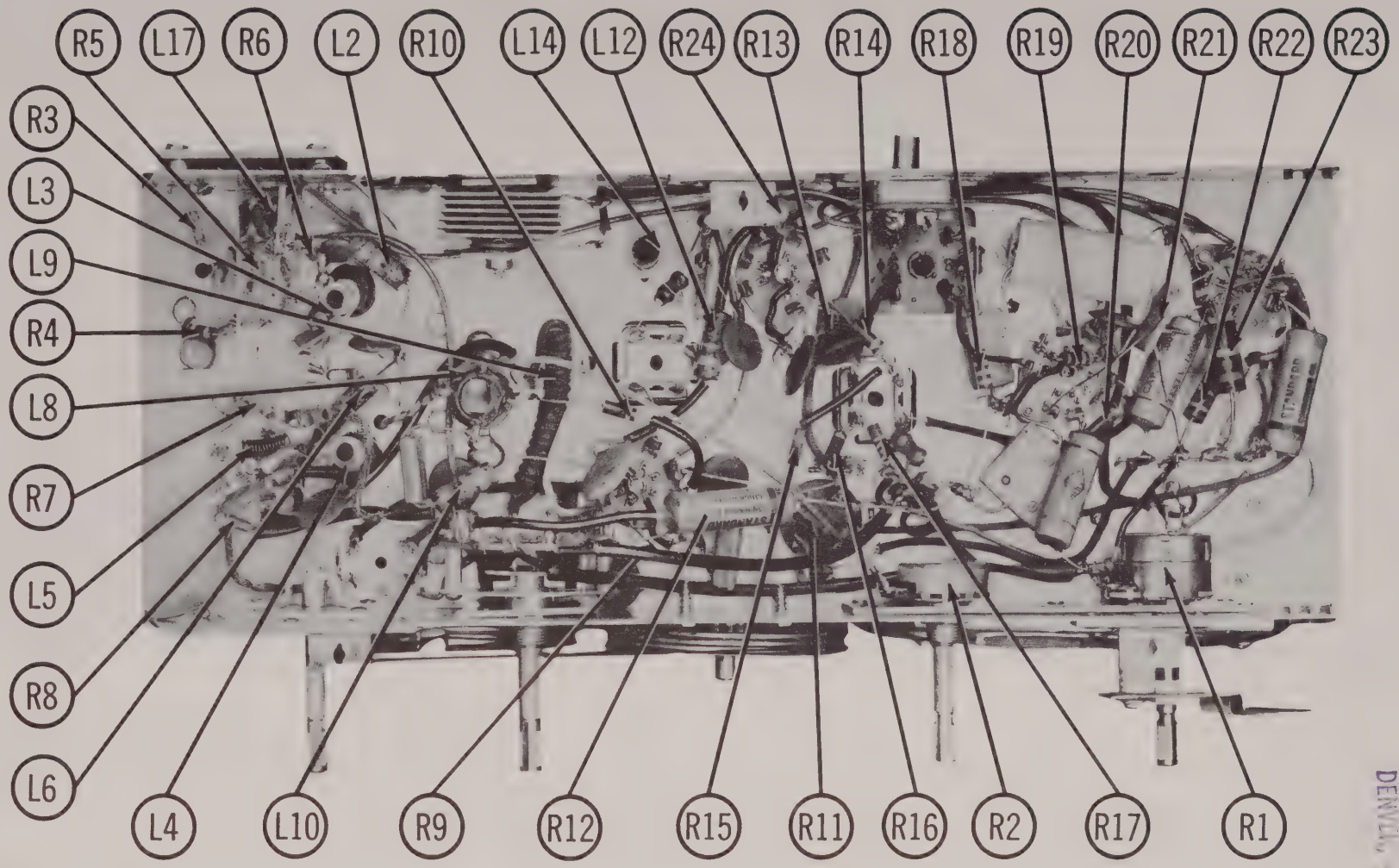
265—8



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

MITCHELL
MODEL 1278

ALIGNMENT INSTRUCTIONS

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05	High side to antenna stator lug on tuning gang. Low side to chassis.	455KC (400∿ Mod.)	BC	Tuning gang fully open.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2	100MMFD	High side to external antenna lead on loop. Low side to chassis.	1620KC	"	"	"	A5	"
3	"	"	1400KC	"	Tune to 1400KC signal.	"	A6	"
4	"	"	600KC	"	Tune to 600KC signal.	"		Check calibration at 600KC. If necessary, bend slotted antenna rotor plates for maximum deflection.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5	250MMFD	High side to pin 1 (grid) of 6BA6 (V4). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A8	Adjust for maximum deflection.
6	"	"	"	"	"	DC probe to point Ⓒ. Common to Ⓑ.	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
7	"	High side to pin 1 (grid) of 12AU7 (V3). Low side to chassis.	"	"	"	DC probe to point Ⓐ. Common to chassis.	A9	Adjust for maximum deflection.
8	"	High side to pin 1 (grid) of 12BE6 (V2). Low side to chassis.	"	"	"	DC probe to point Ⓐ. Common to chassis.	A10, A11	"

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5	250MMFD	High side to pin 1 (grid) of 6BA6 (V4). Low side to chassis.	10.7 (450KC Swp)	FM	Point of non-interference.	Vert. amp. to point Ⓐ. Common to chassis.	A8	Adjust for curve of maximum aplitude and symmetry similar to Fig. 1.
6	"	"	"	"	"	Vert. amp. to point Ⓒ. Common to chassis.	A7	Adjust so that 10.7MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.
7	"	High side to pin 1 (grid) of 12AU7 (V3). Low side to chassis.	"	"	"	DC probe to point Ⓐ. Common to chassis.	A9	Adjust for maximum deflection.
8	"	High side to pin 1 (grid) of 12BE6 (V2). Low side to chassis.	"	"	"	"	A10, A11	"

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
9	270Ω carbon resistor.	Across FM antenna terminals with high side (thru 270Ω) to center terminal.	98MC (Unmod.)	FM	98MC	High side to point Ⓐ. Common to chassis.	A12, A13	Adjust in order given for maximum deflection. Reseal core studs.

FIG. 1

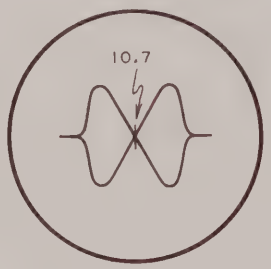


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		MITCHELL PART No.	STANDARD REPLACEMENT		
V1	FM RF Amp.	12BA6	12BA6	7BK	
V2	FM Converter-AM Osc.	12BE6	12BE6	7CH	
V3	FM IF Amp. - AM Mixer	12AU6	12AU6	7BK	
V4	FM IF Amp. - AM IF Amp.	12BA6	12BA6	7BK	
V5	Ratio Det-AM Det-AVC-AF Amp.	19T8	19T8	9E	
V6	Output	50C5	50C5	7CV	

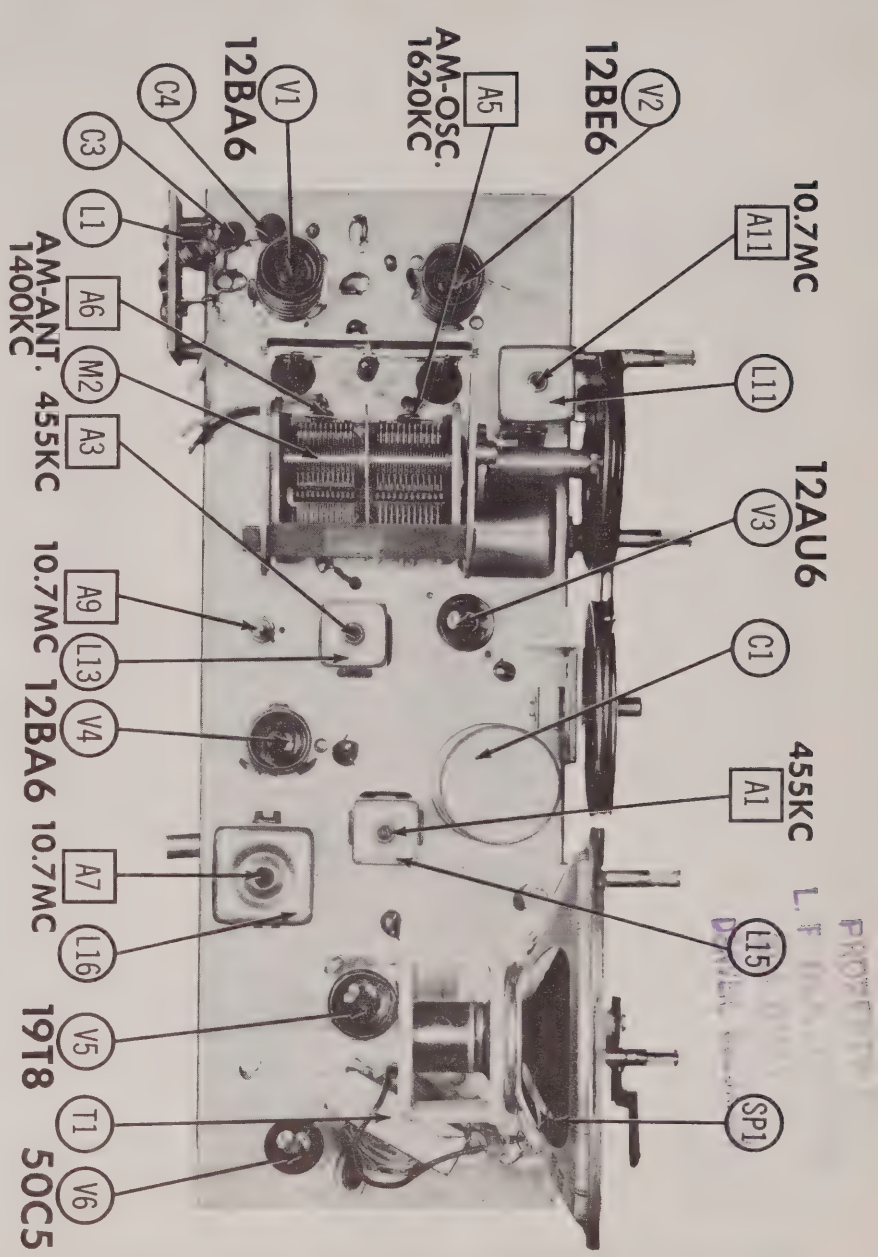
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MITCHELL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲60	150	N-9528	AFH4-42		D032		FP344.2	TVL-4524	
B	■80	150								
C	▲20	25								
C2	4	50	N-9685	PRS/150-4		BR550		TC30	TVA-1303	
C3	1500		N-9596	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C4	1500		N-9596	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C5	22		N-9049	SI22	D6-220	TP22	GP1K-220	UC-5422	5GA-Q22	
C6	1500		N-9596	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C7	1500		N-9596	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C8	1500		N-9596	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C9	5000		N-6272	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C10	33		N-9577	SI33	D6-330	TP27	GP1K-330	UC-5433	5GA-Q33	
C11	30		N-9707	SI30NP0	TCZ-30	TZ17	NP0K-300			
C12	47		N-9738							
C13	25		N-9578	SI25NP0	TCZ-25			ZT-5425	5TCC-Q25	Note 1
C14	.005	600	N-4895	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C15	5000		N-6272	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C16	100	500	N-2311	1468-0001		5W5T1		MC235	MS-31	
C17	1500		N-9596	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C18	5000		N-6272	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C19A	1500		N-9595	BPD-2X0015	DD3-152	DK071	812-0015	DCD-5215	5HK-2D15	
B	1500									
C20	5000		N-6272	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C21	22		N-9049	SI22NP0	TCZ-22	TZ14	NP0K-220		5TCC-Q22	Note 2
C22	5000		N-6272	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C23	3900	500	N-6892	1467-004		1W5D39		MC-463	MS-34	
C24	100		N-9053	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C25	5000		N-6272	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C26A	4000		N-7774	BPD-2X004	DD3-402	DK078	812-004	DCD-524	5HK-2D4	
B	4000									
C27	5000		N-6272	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C28	10000		N-6482	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C29	5000		N-6272	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C30	100		N-9053	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C31	180	500	N-9597	1468-0002		5W5T18		MC-237	MS-32	
C32	2200	500	N-6891	1467-002		1W5D22		MCB457	MS-22	
C33A	4000		N-7774	BPD-2X004	DD3-402	DK078	812-004	DCD-524	5HK-2D4	
B	4000									
C34	.005	600	N-4894	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C35	5000		N-6272	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C36	5000		N-6272	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	
C37A	5000									
B	250		♦N-8215	♦PA-112-2	♦PC-71	♦112TM2	♦1406-02		♦T-4	
C										
C38	.005	600	N-4894	P688-005	DD-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C39	.01	400	N-1344	P488-01	D6-102	CUB4S1	GP2-333-103	PT411	4TM-S1	
C40	10000		N-6482	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C41	.01	400		P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C42	5000		N-6272	BPD-005	DD-502	K080	801-005	DC-525	5HK-D5	

♦ Items C37A, C37B, C37C, R21A and R21B are combined in one unit.
Note 1: Some models may use a 25MMF in this application.
Note 2: Some models may use a 22MMF in this application.

CHASSIS—TOP VIEW



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PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MITCHELL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	N-9681	Q13-133	A47-500K-Z	BSK-60-S	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R1A
R2A	1Meg	½	N-8159	Q11-137	A47-1Meg-S	AB-69	U-54	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MITCHELL PART No.	IRC PART No.	
R3	680Ω	½	N-4228	BTS-680	
R4	68Ω	½	N-6485	BTS-68	
R5	470Ω	½	N-6011	BTS-470	
R6	470Ω	½	N-6011	BTS-470	
R7	22KΩ	½	N-6012	BTS-22K	
R8	470Ω	½	N-6011	BTS-470	
R9	3.3Meg	½	N-4062	BTS-3.3Meg	
R10	33Ω	½	N-4022	BTS-33	
R11	470Ω	½	N-6011	BTS-470	
R12	10KΩ	½	N-4895	BTS-10K	
R13	68Ω	½	N-6485	BTS-68	
R14	5600Ω	½	N-7400	BTS-5600	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MITCHELL PART No.	IRC PART No.	
R15	470Ω	½	N-6011	BTS-470	
R16	1Meg	½	N-2976	BTS-1Meg	
R17	47KΩ	½	N-7124	BTS-47K	
R18	33KΩ	½	N-6717	BTS-33K	
R19	33KΩ	½	N-6717	BTS-33K	
R20	6.8Meg	½	N-4028	BTS-6.8Meg	
R21A	220KΩ	½	♦N-8215	BTS-220K	
B	470KΩ	½		BTS-470K	
R22	180Ω	1	N-9537	BTA-180	
R23	560Ω	2	N-9705	BTB-560	
R24	27Ω	2	N-9539	BTB-27	

♦ Items R21A, R21B, C37A, C37B and C37C are combined in one unit.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MITCHELL PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.4KΩ	3.4Ω	N-9430	A-3330	A-3031		Z1103	24S50A	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MITCHELL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5"	PM	3.4Ω	N-7980	ST-105 Mod. P5-X	5A1	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MITCHELL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM Ant. Coil	0Ω		N-9530				
L2	Fil. Choke	3Ω		N-9525	19-1003		4608	3.3 Microhenries; IRC part no. CLA
L3	FM RF Coil	0Ω	0Ω	N-9604				
L4	FM Osc. Coil	0Ω		N-9602				
L5	Cathode Choke	0Ω		N-9527	19-1000		4602	1 Microhenry
L6	Fil. Choke	3Ω		N-9525	19-1003		4608	3.3 Microhenries; IRC part no. CLA
L7	AM Loop Ant.	2.1Ω		N-9598				Includes cabinet back.
L8	AM Osc. Coil	7.5Ω	7.5Ω	N-9601	14-1040 ▲		71-Osc. ▲	
L9	RF Choke	0Ω		N-9526	19-1000		4602	1 Microhenry
L10	Fil. Choke	3Ω		N-9525	19-1003		4608	3.3 Microhenries; IRC part no. CLA
L11	1st FM IF	1.3Ω	1.3Ω	N-9600	16-3487	FM-254	1463	
L12	Fil. Choke	3Ω		N-9525	19-1003		4608	3.3 Microhenries; IRC part no. CLA
L13	1st AM IF	9Ω	9Ω	N-9657	16-6758	BC-352	12-C1	
L14	2nd FM IF	.4Ω	.4Ω	N-9529				
L15	2nd AM IF	9Ω	9Ω	N-9657	16-6758	BC-353	12-C2	
L16	Ratio Det	2.2Ω	.1ΩCT	N-9605	17-3487 ■	FM-252 ■	1465 *	Tertiary winding = .3Ω
L17	Fil. Choke	3Ω		N-9525	19-1003		4608	3.3 Microhenries; IRC part no. CLA

* Use adaptor plate and drill mounting holes.
■ Drill mounting holes.
▲ Drill mounting hole.

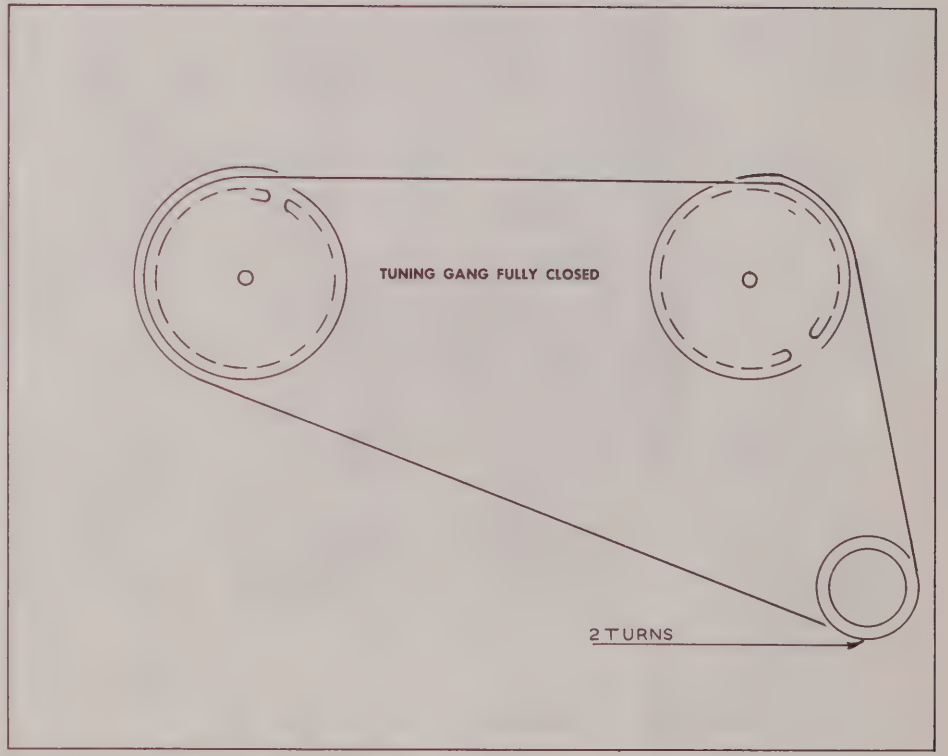
PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	MITCHELL PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	
M1	.072A	N-9541	1004A	RS100	6S100	100	5M1	

MISCELLANEOUS

ITEM No.	PART NAME	MITCHELL PART No.	NOTES
M2	Tuning cap.	N-9672	15-380MMF; 15-162MMF.
M3	Switch	N-9523	AM-FM



DIAL CORD STRINGING

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RCA VICTOR
MODEL 4-X-661 (Ch. RC1141)

TRADE NAME	RCA Victor Model 4-X-661 (Ch. RC1141)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N. J.
TYPE SET	AC-DC Operated 2-Band AM Superheterodyne Receiver
TUBES (Six)	Types 12BA6 RF Amp. 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det-AVC-AF Amp., 35C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	.26 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540KC - 1600KC
SHORT WAVE	5.95MC - 17.9MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1MFD	High side to pin 7 (grid) of 12BE6 (V2). Low side to B-.	455KC (400~ Mod.)	BC	Point of non-interference near high end of dial.	Across voice coil.	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2	"	High side to pin 1 (grid) of 12BA6 (V2). Low side to B-.	"	"	"	"	A5	Adjust for MINIMUM output.
3		Loop	1620KC	"	Tuning gang fully open.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4		"	1400KC	"	Tune to 1400KC signal.	"	A7	"
5		"	600KC	"	600KC	"	A8	Adjust for maximum output while rocking tuning gang thru 600KC signal. Repeat steps 3, 4 & 5.
7	47MMF	High side to point (A). Low side to B-.	18.2MC	SW	Tuning gang fully open.	"	A9	Adjust for maximum deflection. Two peaks may be obtained. Proper peak will occur when A9 is adjusted for lowest capacity.
8	"	"	16.0MC	"	Tune to 16.0MC signal.	"	A10	Adjust for maximum deflection. Two peaks may be obtained. Proper peak will occur when A10 is adjusted for highest capacity. Check for image frequency at 16.91MC.
9	"	"	7.0MC	"	Tune to 7.0MC signal.	"	A11, A12	Adjust for maximum deflection. Check for image frequency at 7.91MC. If necessary, repeat steps 7, 8 & 9.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

RCA VICTOR
MODEL 4-X-661 (Ch. RC1141)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		RCA PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	12BA6	12BA6	7BK	
V2	Converter	12BE6	12BE6	7CH	
V3	IF Amp.	12BA6	12BA6	7BK	
V4	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V5	Output	35C5	35C5	7CV	
V6	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	80	150	75980	PRS150/80-40		BBRD8415		TCD498	TVA-3451	Red
B	50	150								Green
C2	3.3		71503	SI3.3NP0	TCZ-3.3	TZ06	NP0A-3R3	ZT-5533	5TCCB-V33	
C3	.0022	400	77446	P688-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C4	.047	400	73553	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C5	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C6	12		33380	SI12N750	TCN-12	TN02	N750K-120		5TCU-Q12	
C7	56		71924	SI56N750	TCN-56	TN16	N750L-560	NT-5456	5TCU-Q56	
C8	2200		77953	BPD-0022	D6-222	K073	801-0022	DC-522	5HK-D22	
C9	.47		79266							
C10	56		71924	SI56N750	TCN-56	TN16	N750L-560	NT-5456	5TCU-Q56	
C11	3000	500	47024	1464-302		1R5D3		MCE461	MS-23	
C12	300	500	79255					MCE241		
C13	4700		73473	BPD-0047	DD-502	K079	811-005	DC-525	5HK-D47	
C14	.1	400	77423	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C15A	220									
B	5000									
C	5000		♦79058	♦PA-113-2	♦PC-151	♦116TM2	♦1408-02		♦DT-2	
D	250									
E										
C16	.1	200	79251	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C17	.0068	400	78854	P688-0068	D6-682	CUB6D68	GP2-333-682	PT6268	6TM-D68	
C18	10000		73960	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	Note 1
C19	.1	400	73551	P488-1	DF-104	CUB4P1		PT401	4TM-P1	

Note 1: Some versions use .047MFD in this application. (Part no. 75071)
♦ Items C15A, C15B, C15C, C15D, C15E, R15A, R15B and R15C are combined in one unit.
When replacing items seperately, C15D and C15E should total 250MMF.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	79282	Q13-137	A47-1Meg-Z	B-70-S	U-53	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R1A

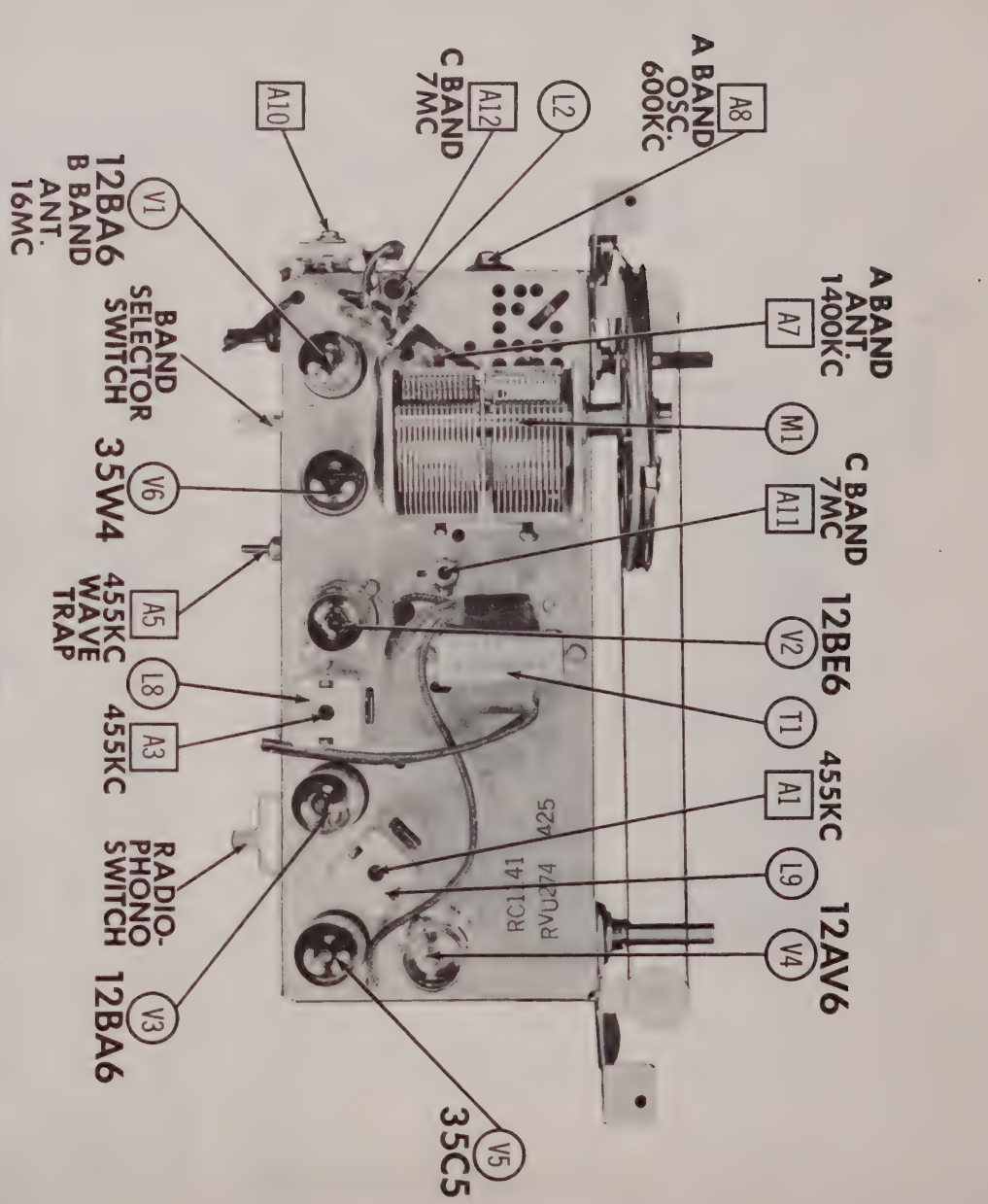
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA PART No.	IRC PART No.	
R2	47Ω	½	503047	BTS-47	
R3	12KΩ	½	503312	BTS-12K	
R4	1500Ω	½	503215	BTS-1500	
R5	220Ω	½	504122	BTS-220	
R6	47KΩ	½	503347	BTS-47K	
R7	33KΩ	½	503333	BTS-33K	
R8	560Ω	½	503156	BTS-560	
R9	150Ω	½	503115	BTS-150	
R10	2.2Meg	½	503522	BTS-2.2Meg	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	RCA PART No.	IRC PART No.	
R11	56KΩ	½	503356	BTS-56K	
R12	2700Ω	½	503227	BTS-2700	
R13	270Ω	½	502127	BTS-270	
R14	1Meg	½	503510	BTS-1Meg	
R15A	6.8Meg	½		BTS-6.8Meg	
B	470KΩ	½	♦79058	BTS-470K	
C	470KΩ	½		BTS-470K	
R16	150Ω	½	503115	BTS-150	
R17	1200Ω	1	513212	BTA-1200	
R18	33Ω	1	513033	BTA-33	

♦ Items R15A, R15B, R15C, C15A, C15B, C15C, C15D and C15E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	R C A PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	3KΩ	3.5Ω	77517	A-3336 ①	A-3031 ①		Z1105 ①	24S50A ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	R C A PART No.	VIKING PART No.	QUAM PART No.	
SP1	4" X 6"	PM	3.5Ω	79293	46J6	46A1	

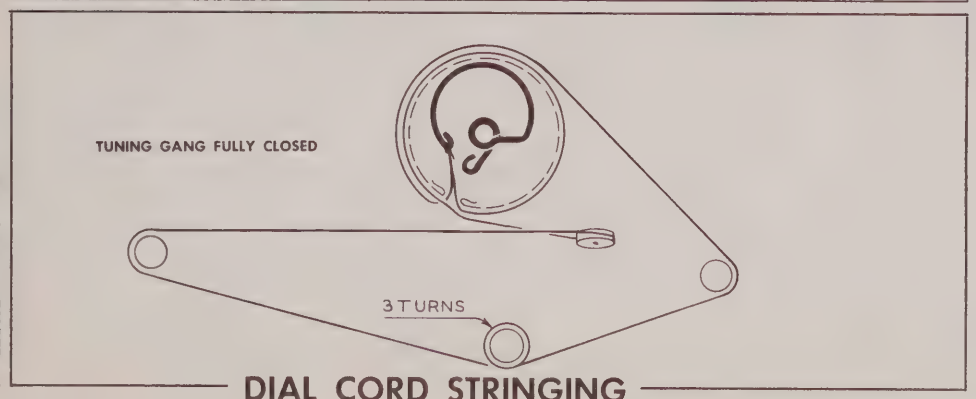
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	R C A PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	1.9Ω		79276				Includes cabinet back.
L2	Band "C" Ant. Coil	1.6Ω	.1Ω	79273				
L3	RF Choke	1.4Ω		79278	19-1004		4610	6.3 Microhenries
L4	RF Coupling Coil	.9Ω		74930	19-1005 *		4612 *	12 Microhenries; Wound on 15KΩ resistor
L5	IF Trap	14Ω		79265			4503	2.2 Millihenries
L6	Band "A" Osc. Coil	.7Ω	7Ω	79286	14-1040	BC-381 ■	71-Osc	
L7	Band "C" Osc. Coil	.1Ω	.1Ω	79289				
L8	Input IF	11Ω	11Ω	74918	16-6758	BC-352	12-C1	
L9	Output IF	15Ω	15Ω	73037	16-6770	BC-355	12-C6	

* Parallel with 15KΩ resistor.
■ Drill mounting hole.

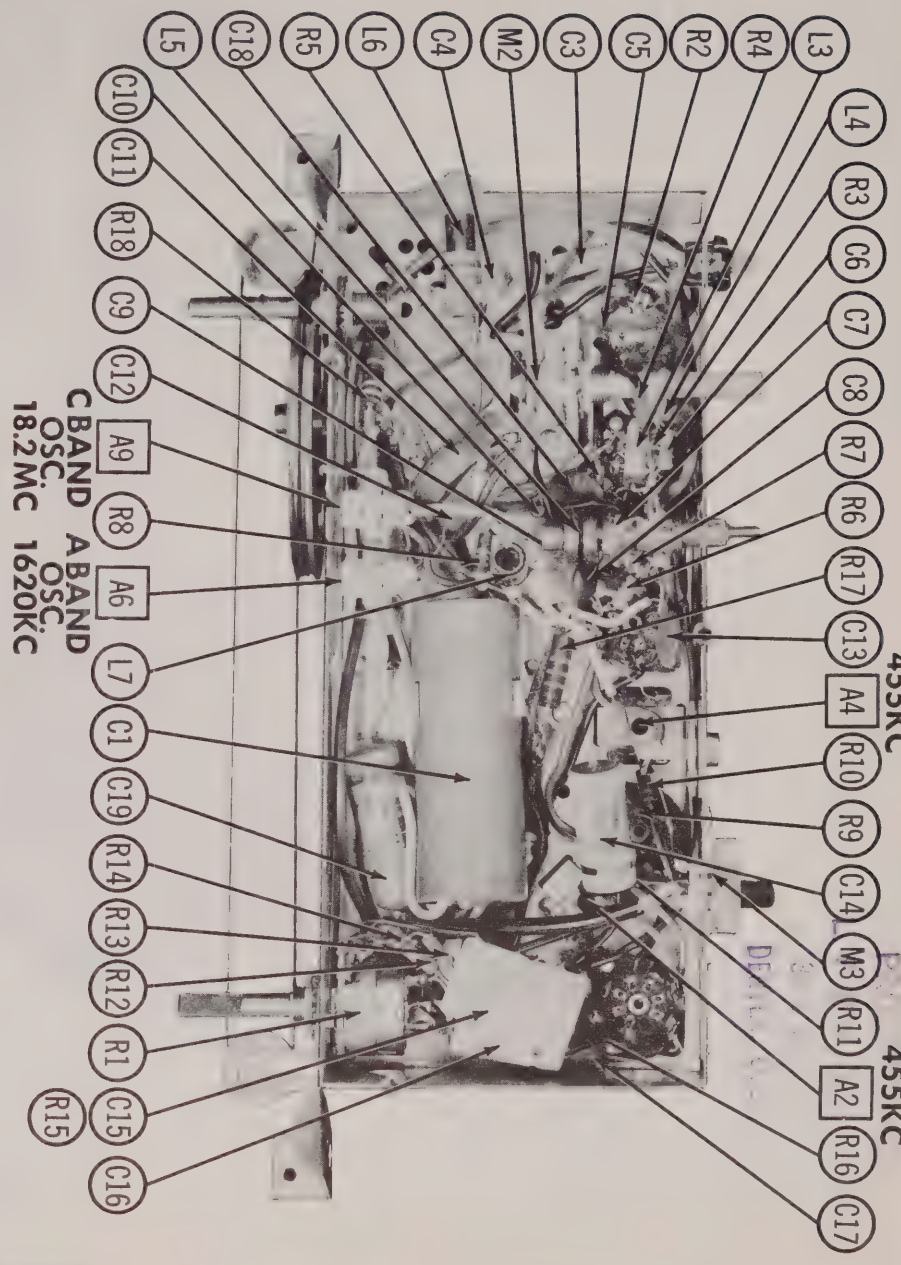
MISCELLANEOUS

ITEM No.	PART NAME	R C A PART No.	NOTES
M1	Tuning Cap.	79288	25-470MMF; 11-270MMF.
M2	Switch	79271	Band Selector
M3	Switch	79256	Radio-Phono
A6	Trimmer Cap.	79254	BC Osc. Coil (4-70MMF.)
A9	Trimmer Cap.	79253	SW Osc. Coil (1.6-18MMF.)
A10	Trimmer Cap.	79780	SW Ant. Coil (3-35MMF.)
	Cabinet	42640	
	Knob	79294	Band Selector
	Knob	79269	On-Off-Volume & Tuning
	Dial Pointer	79268	
	Dial Pointer Plate	79296	



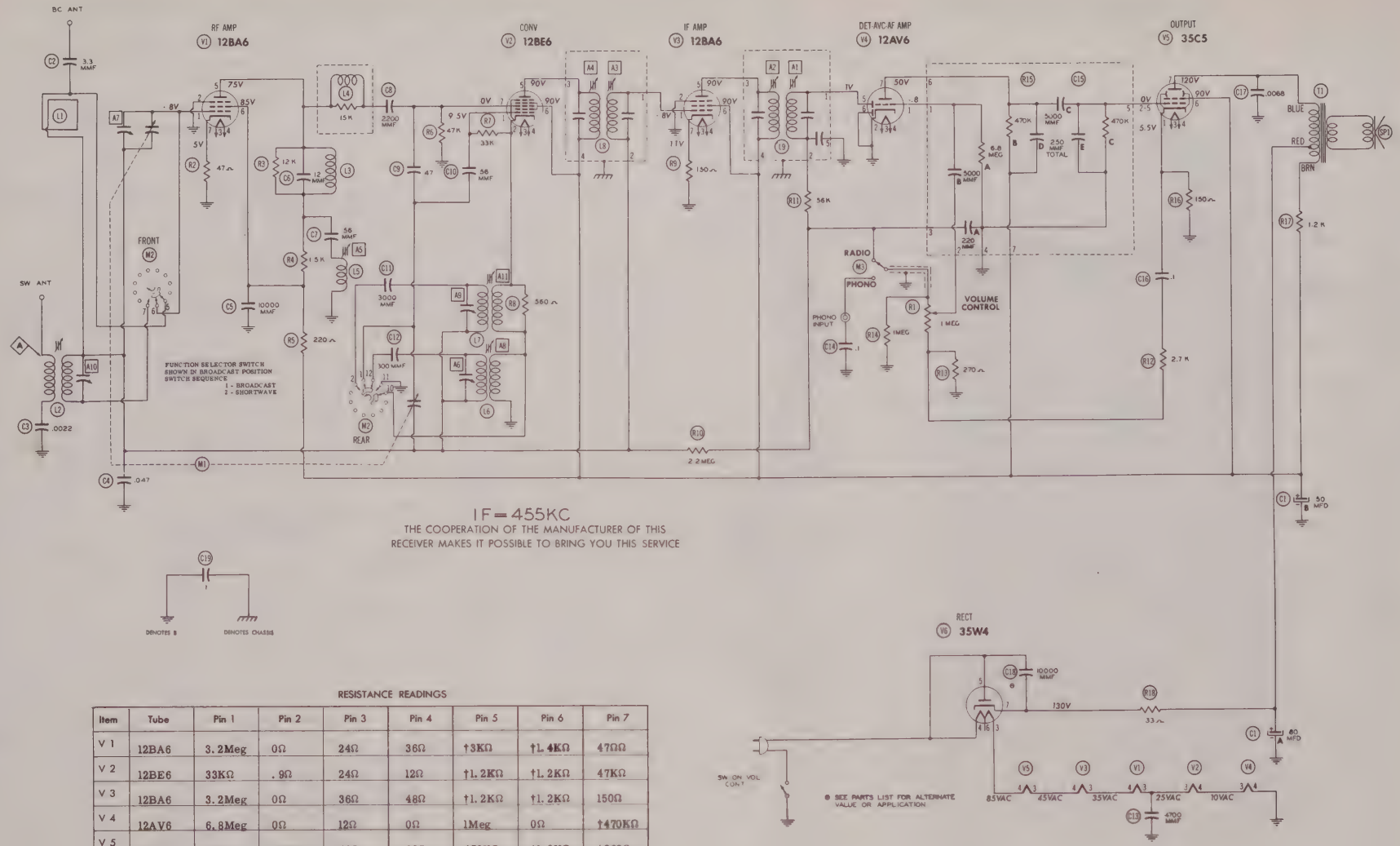
DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



RCA VICTOR
MODEL 4-X-661 (Ch. RC1141)

RCA VICTOR
MODEL 4-X-661 (Ch. RC1141)



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BA6	3.2Meg	0Ω	24Ω	36Ω	†3KΩ	†1.4KΩ	47ΩΩ
V 2	12BE6	33KΩ	.9Ω	24Ω	12Ω	†1.2KΩ	†1.2KΩ	47KΩ
V 3	12BA6	3.2Meg	0Ω	36Ω	48Ω	†1.2KΩ	†1.2KΩ	150Ω
V 4	12AV6	6.8Meg	0Ω	12Ω	0Ω	1Meg	0Ω	†470KΩ
V 5	35C5	150Ω	470KΩ	48Ω	83Ω	470KΩ	†1.2KΩ	†260Ω
V 6	35W4	INF	INF	83Ω	118Ω	118Ω	110Ω	500KΩ

* ALL MEASUREMENTS TAKEN IN "AM" POSITION.
† MEASURED FROM PIN #7 OF V6.

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REGENCY
MODEL HF-150

REGENCY
MODEL HF-150

TRADE NAME	Regency Model HF-150
MANUFACTURER	I.D.E.A., Inc., 7900 Pendleton Pike, Indianapolis, Indiana
TYPE SET	AC Operated 3 Channel 12 Watt Audio Amplifier
TUBES (Six)	Types 12AX7 Phono Pre-Amp., 12AU7 AF Amp., 12AX7 AF Amp.-Phase Inverter (2) 6V6GT Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .71 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

REGENCY
MODEL HF-150

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		REGENCY PART No.	STANDARD REPLACEMENT		
V1	Phono Pre-Amp.	12AX7	12AX7	9A	
V2	AF Amplifier	12AU7	12AU7	9A	
V3	AF Amplifier-Phase Inverter	12AX7	12AX7	9A	
V4	Output	6V6	6V6	7S	
V5	Output	6V6	6V6	7S	
V6	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

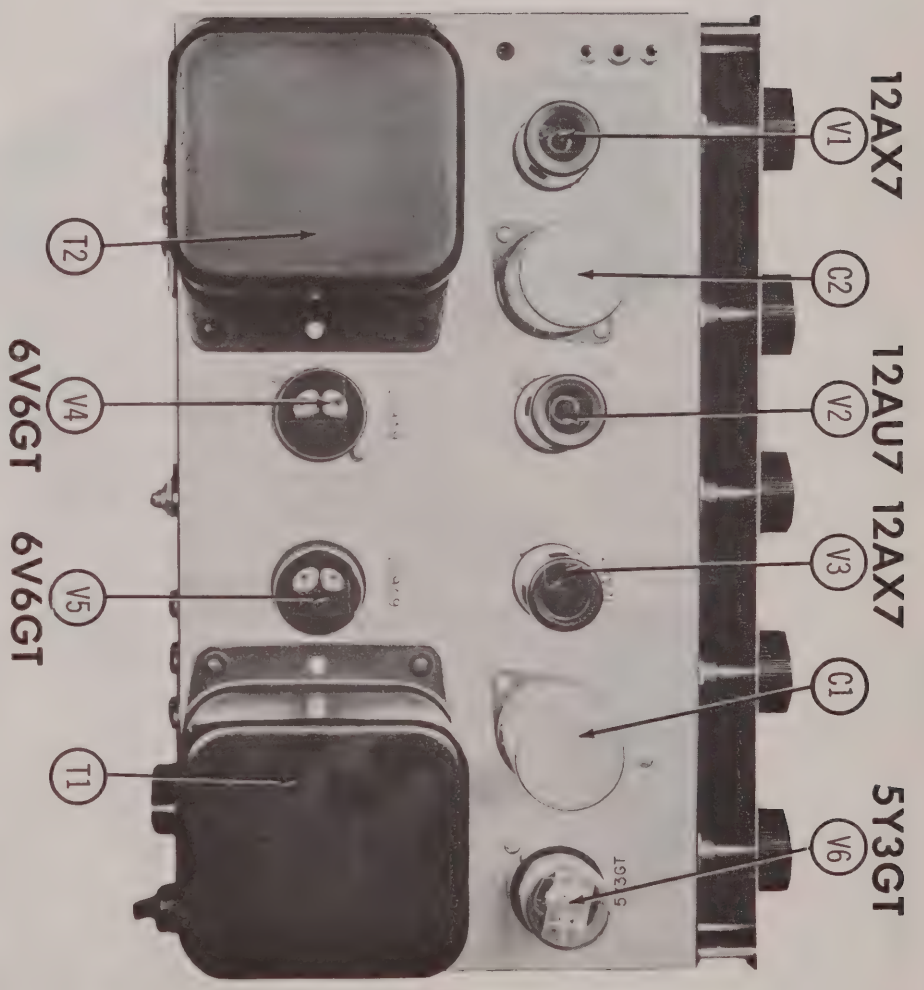
ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	REGENCY PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	■20	450	300-387	AFH3-36 PRS25/250		C027 BRH2525		FP437 TC495	TVL-3780 TVA-1208	
B	▲20	450								
C	▲20	450								
D	250	25								
C2A	▲20	450	300-387	AFH3-36 PRS25/250		C027 BRH2525		FP437 TC495	TVL-3780 TVA-1208	
B	■20	450								
C	▲20	450								
D	250	25								
C3	.03	600		P688-03		CUB6S3		PT613	6TM-S3	
C4	.033	400		P488-033		CUB4S33		PT4133	4TM-S33	
C5	.007	400		P488-007	D6-702	CUB4D7	GP2-333-702	PT427	4TM-D7	
C6	.002	400		P488-002	D6-202	CUB4D2	GP2-333-202	PT422	4TM-D2	
C7	.03	600		P688-03		CUB6S3		PT613	6TM-S3	
C8	.05	600		P688-05	DF-503	CUB6S5		PT615	6TM-S5	
C9	.03	600		P688-03		CUB6S3		PT613	6TM-S3	Note 1
C10	.15	200		P288-15		PJ2P15		PT4015	2TM-P15	
C11	300	500		1468-0003		5W5T3		MCB241	MS-33	
C12	.004	400		P488-004	D6-402	CUB4D4	GP2-333-402	PT424	4TM-D4	
C13	.04	400		P488-04		CUB4S4		PT414	4TM-S4	
C14	.003	400		P488-003	D6-302	CUB4D3	GP2-333-302	PT423	4TM-D3	
C15	.03	600		P688-03		CUB6S3		PT613	6TM-S3	
C16	.001	600		P688-001	D6-102	CUB6D1	GP2-333-102	PT621	6TM-D1	
C17	.03	600		P688-03		CUB6S3		PT613	6TM-S3	
C18	.03	600		P688-03		CUB6S3		PT613	6TM-S3	
C19	.03	600		P688-03		CUB6S3		PT613	6TM-S3	

Note 1. Some models may use an .05MFD @ 600V in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	REGENCY PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	BA012-397	Q13-133	A47-500K-Z	B-60-S	U-48	Bass
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R1A
R2A	500KΩ	½	BA011-1321	Q13-133	A47-500K-Z	B-60	U-48	Treble
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R2A
R3	500KΩ	½	BA051-005			C1-60		Compensated volume - tapped @ 200KΩ & 300KΩ.
R4A	500KΩ	½	BA011-1321	Q13-133	A47-500K-Z	B-60	U-48	Level
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R4A
R5A	500Ω	½	BA011-1322	Q11-103	A47-500-S	AB-4		Hum Adj.
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1		Attach to R5A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA REGENCY PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R6	47KΩ	½		BTS-47K	
R7	560Ω	½		BTS-560	
R8	100KΩ 5%	1			
R9	1Meg	½		BTS-1Meg	
R10	470KΩ	½		BTS-470K	
R11	10KΩ	½		BTS-10K	
R12	4700Ω	½		BTS-4700	
R13	22KΩ	½		BTS-22K	
R14	12KΩ	½		BTS-12K	
R15	68KΩ	½		BTS-68K	
R16	22KΩ	1		BTA-22K	
R17	10Meg	½		BTS-10Meg	
R18	560Ω	½		BTS-560	
R19	100KΩ	½		BTS-100K	
R20	1Meg	½		BTS-1Meg	
R21	22KΩ	1		BTA-22K	
R22	1000Ω 5%	½		BTS-1000 5%	
R23	68KΩ	½		BTS-68K	
R24	47KΩ	½		BTS-47K	
R25	4700Ω	½		BTS-4700	
R26	47KΩ	½		BTS-47K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA REGENCY PART No.	REPLACEMENT DATA IRC PART No.	NOTES
R27	1000Ω 5%	½		BTS-1000 5%	
R28	68KΩ	½		BTS-68K	
R29	27KΩ	1		BTA-27K	
R30	1000Ω	½			
R31	220Ω	½		BTS-220	
R32	470KΩ	½		BTS-470K	
R33	470KΩ	½		BTS-470K	
R34	470KΩ	½		BTS-470K	
R35	100KΩ	1		BTA-100K	
R36	100KΩ	1		BTA-100K	
R37	1200Ω	½		BTS-1200	
R38	470KΩ	½		BTS-470K	
R39	1000Ω	½		BTS-1000	
R40	250Ω	10			
R41	10KΩ	10			
R42	470KΩ	½		BTS-470K	
R43	1000Ω	½			
R44	300Ω	10		1 3/4A-300	
R45	1000Ω	½			
R46	3Ω	½			
R47	3Ω	½			

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA REGENCY PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @.71A	700VCT .095A	5VAC @2A	6.3VAC @2.3A		PC-8410			P9314 ①②	22R16 ①

① Drill new mounting holes.
② Tape 6.3V center-tap.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA REGENCY PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T2	6.7KΩ CT tap @ 88Ω CT	16Ω tap @ 8Ω, 4Ω							

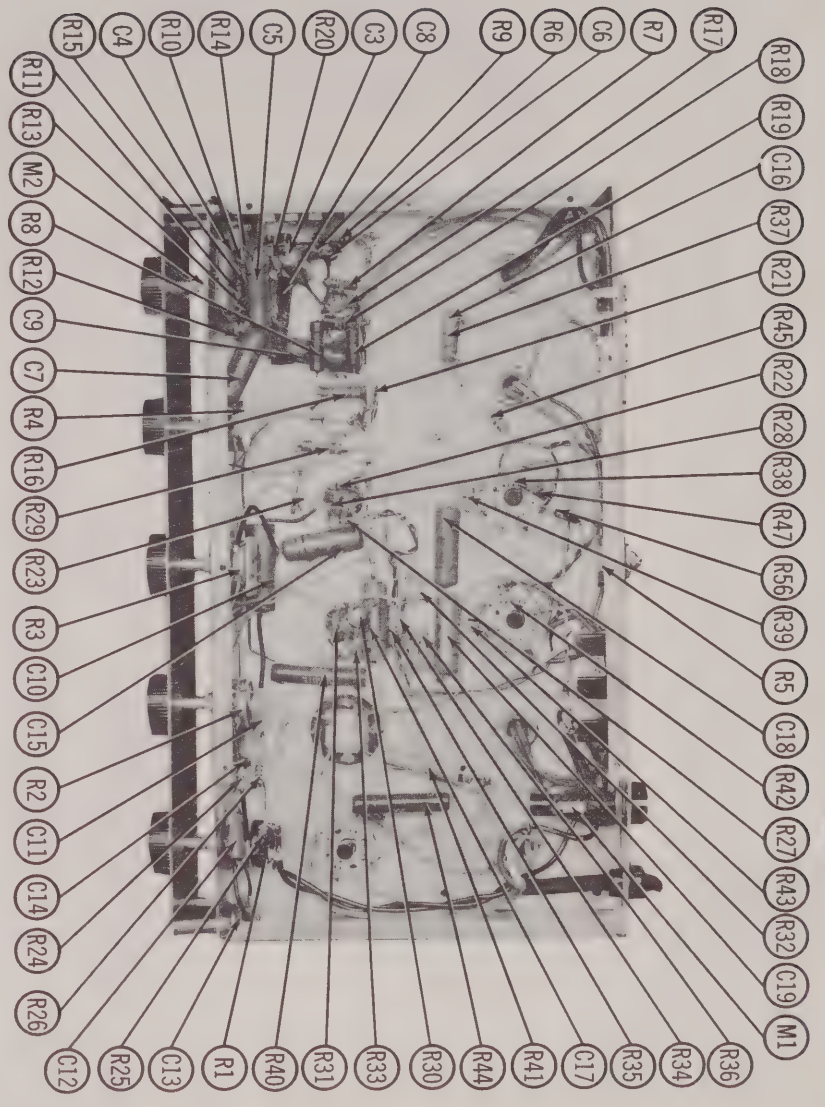
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA REGENCY PART No. FUSE	REGENCY PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	2A 250V			312002 (2A-3AG)	341001	AGC 2	HKP

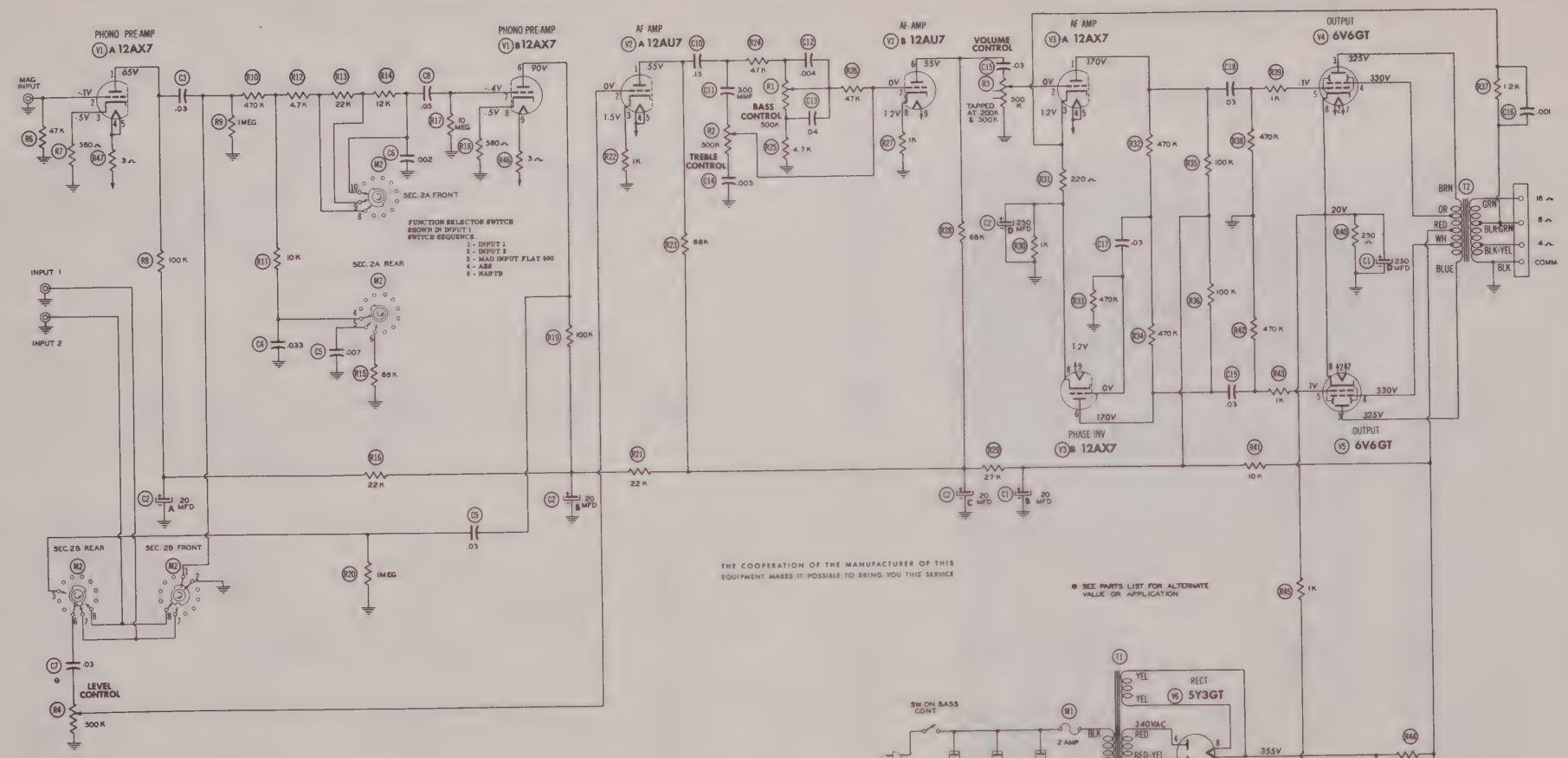
MISCELLANEOUS

ITEM No.	PART NAME	REGENCY PART No.	NOTES
M2	Switch Knob	100-579	Selector & phono compensator 5 used

CHASSIS—BOTTOM VIEW



REGENCY MODEL HF-150



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†181KΩ	47KΩ	560Ω	1.5KΩ	1.5KΩ	†159KΩ	10Meg	560Ω	1.5KΩ
V 2	12AU7	†105KΩ	250KΩ	1KΩ	1.5KΩ	1.5KΩ	†105KΩ	100KΩ	1KΩ	1.5KΩ
V 3	12AX7	†110KΩ	140KΩ	600Ω	1.5KΩ	1.5KΩ	†110KΩ	470KΩ	600Ω	1.5KΩ
V 4	6V6GT	0Ω	1.5KΩ	†155Ω	†44Ω	470KΩ	470KΩ	1.5KΩ	250Ω	
V 5	6V6GT	0Ω	1.5KΩ	†155Ω	†44Ω	470KΩ	470KΩ	1.5KΩ	250Ω	
V 6	5Y3GT	INF	60KΩ	INF	79Ω	INF	72Ω	INF	60KΩ	

† MEASURED FROM PIN 8 OF V6.

1 DC voltages measurements taken with vacuum tube voltmeter.
2 AC voltages measured at 1000 ohms per volt.
3 Socket connections are shown as bottom views.
4 Measured values are from socket pin to common negative.
5 Line voltage maintained at 117 volts for voltage readings.
6 Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
7 All controls at minimum, proper output load connected.

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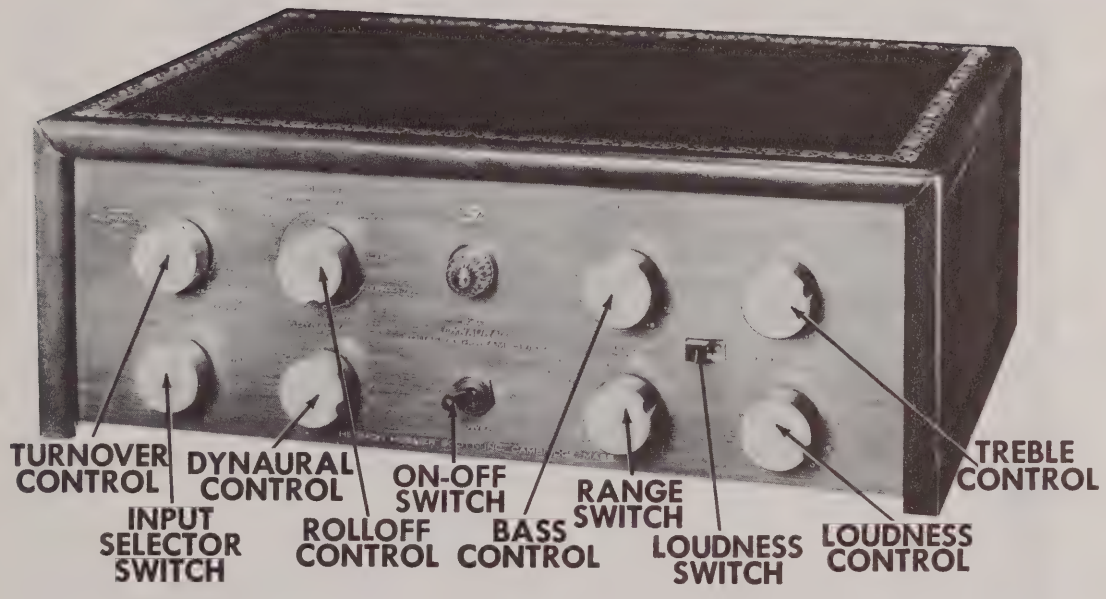

H. H. SCOTT
MODEL 121-A

TRADE NAME	H.H. Scott Model 121-A
MANUFACTURER	Hermon Hosmer Scott, Inc., 385 Putnam Ave., Cambridge 39, Mass.
TYPE SET	AC Operated 2 Channel Equalizer Pre-Amplifier
TUBES (Six)	Types 12AX7 AF Amp., 12AU7 AF Amp., 6AL5 Bias Rect., 6BA6 High Freq. Gate, 6BA6 Low Freq. Gate, 12AX7 AF Amp.-Cathode Follower
POWER SUPPLY	110-120 Volts AC RATING .27 Amp. @ 117 Volts AC

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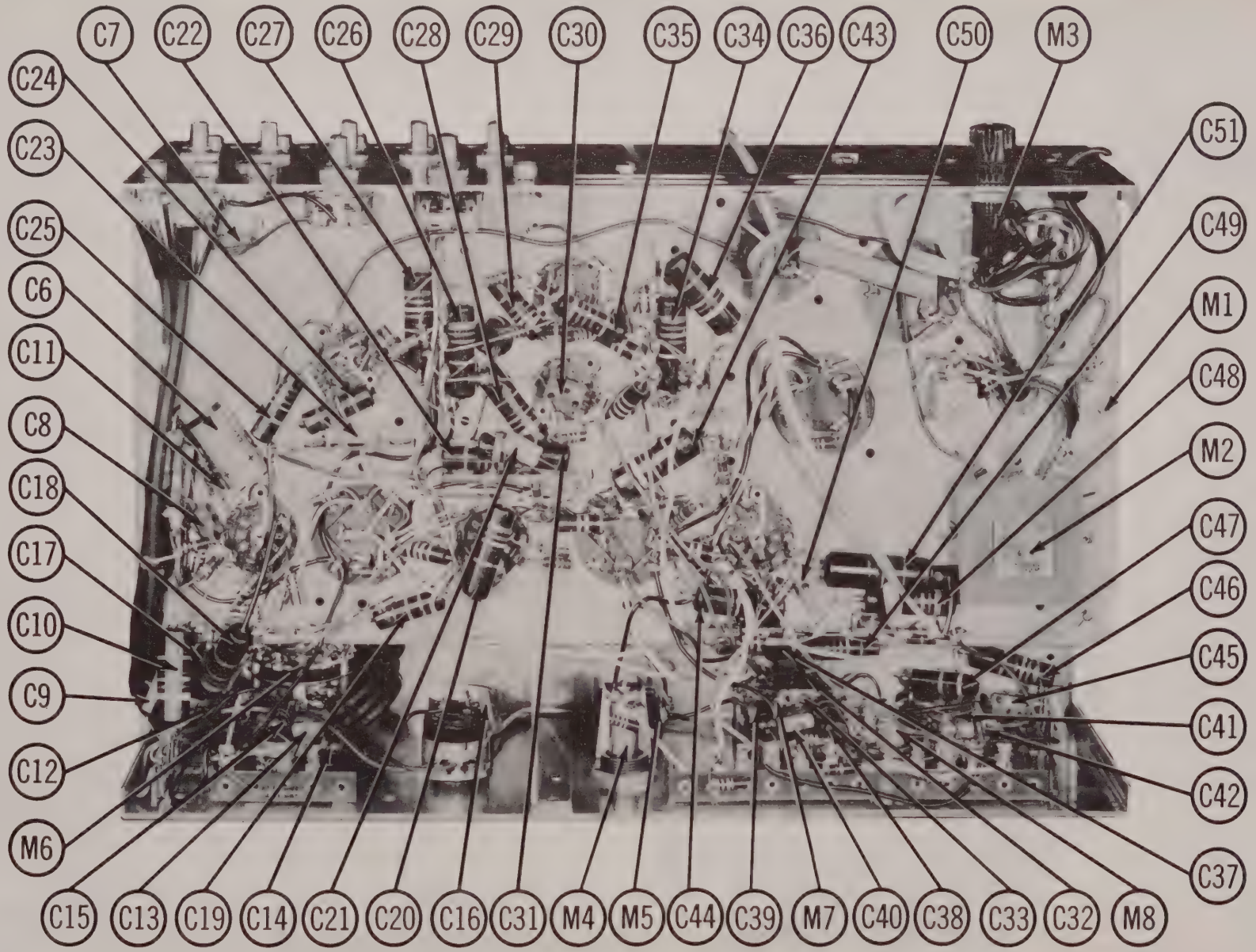
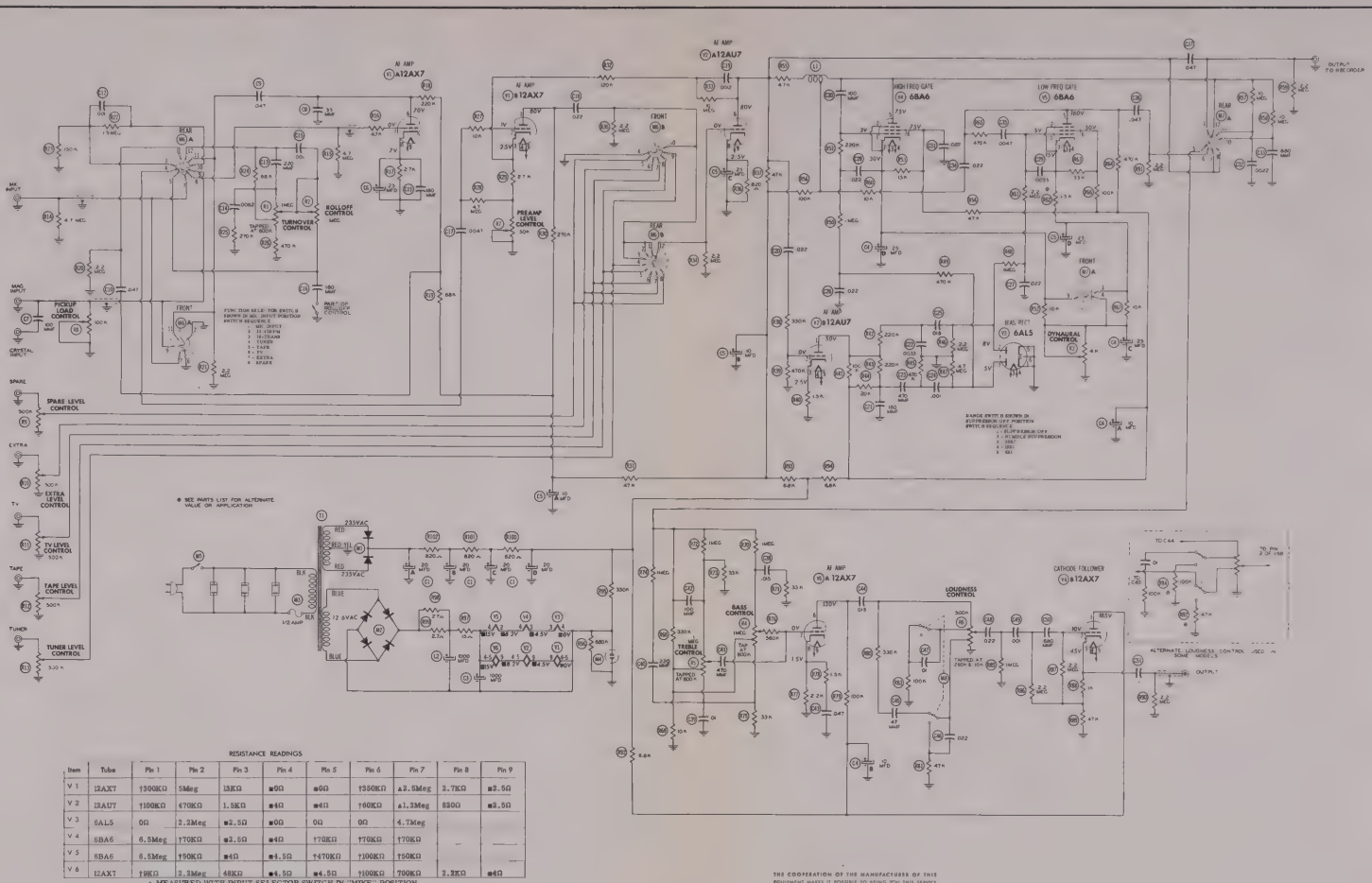


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†300KΩ	5Meg	13KΩ	■0Ω	■0Ω	†350KΩ	▲2.5Meg	1.7KΩ	■2.5Ω
V 2	12AU7	†100KΩ	470KΩ	1.5KΩ	■4Ω	■4Ω	†60KΩ	▲1.3Meg	830Ω	■2.5Ω
V 3	6AL5	0Ω	2.2Meg	■2.5Ω	■0Ω	0Ω	0Ω	4.7Meg		
V 4	6BA6	6.5Meg	†70KΩ	■2.5Ω	■4Ω	†70KΩ	†70KΩ	†70KΩ		
V 5	6BA6	6.5Meg	†50KΩ	■4Ω	■4.5Ω	†470KΩ	†100KΩ	†50KΩ		
V 6	12AX7	†9KΩ	2.2Meg	48KΩ	■4.5Ω	■4.5Ω	†100KΩ	700KΩ	2.2KΩ	■4Ω

▲ MEASURED WITH INPUT SELECTOR SWITCH IN "MIKE" POSITION
■ MEASURED FROM LOW SIDE OUTPUT OF M2.
† MEASURED FROM POSITIVE TERMINAL OF C1A

THE COOPERATION OF THE MANUFACTURERS OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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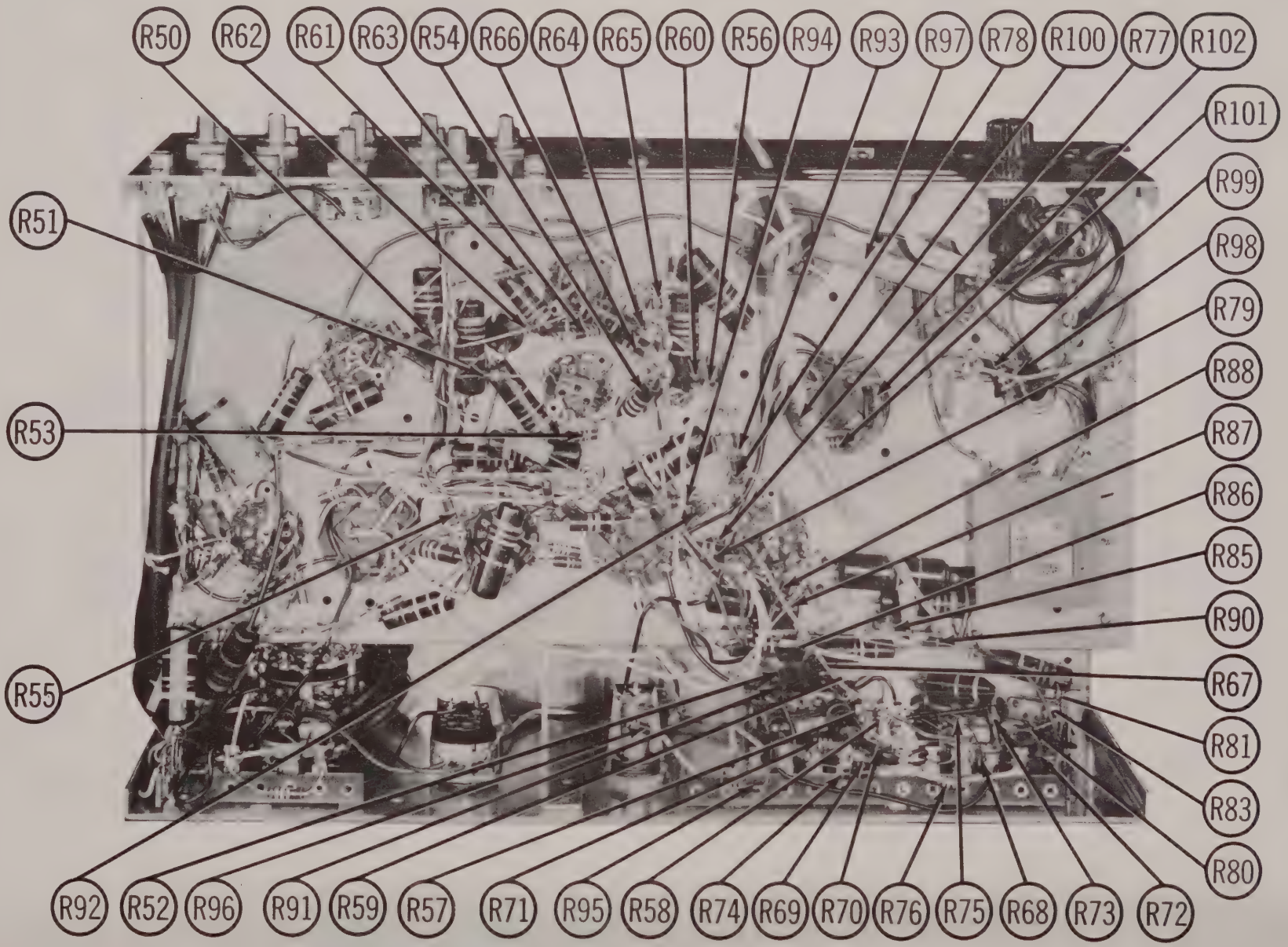
265-11

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

H.H.SCOTT
MODEL 121-A

PROPE
L. F. E
3924
DENVER, COLORADO



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

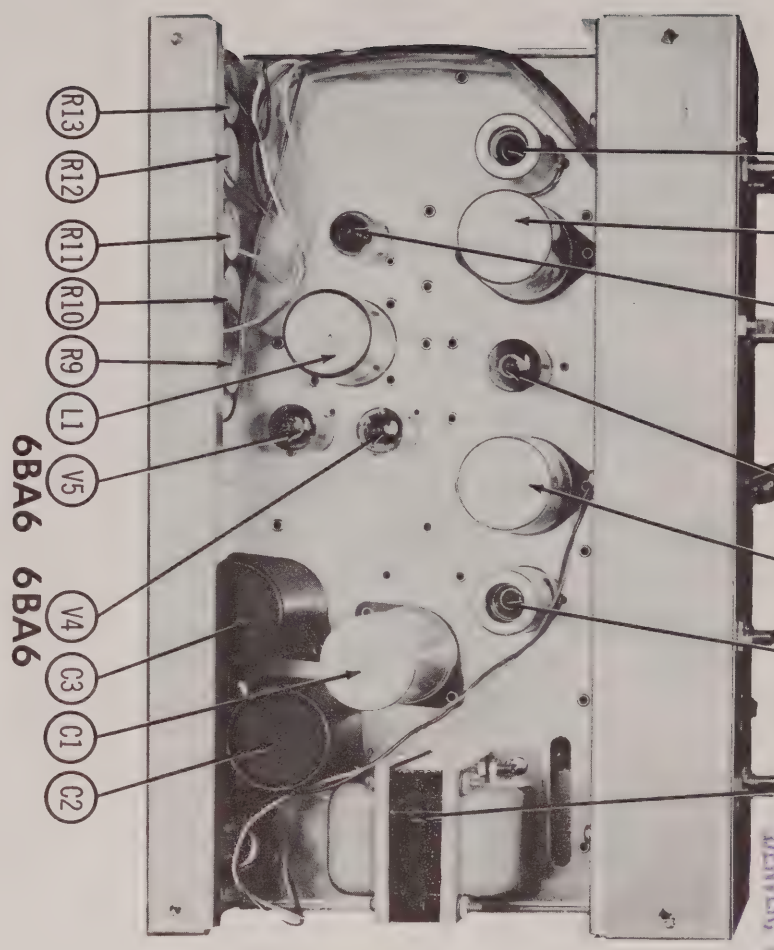
ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		H. H. Scott PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	12AX7	12AX7	9A	
V2	AF Amplifier	12AU7	12AU7	9A	
V3	Bias Rectifier	6AL5	6AL5	6BT	
V4	High Freq. Gate	6BA6	6BA6	7BK	
V5	Low Freq. Gate	6BA6	6BA6	7BK	
V6	AF Amplifier-Cath. Follower	12AX7	12AX7	9A	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	H.H. Scott PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲20	350		AFH4-14						
B	■20	350								
C	▲20	350								
D	20	350								
C2	1000	25		AFH1-10		A013		WP059	TVL-1230	
C3	1000	25		AFH1-10		A013		WP059	TVL-1230	
C4A	▲10	450		AFH4-63		D088				
B	■10	450								
C	▲25	25								
D	25	25								
C5A	▲10	450		AFH4-63		D088				
B	■10	450								
C	▲25	25								
D	25	25								
C6	25	25		PRS25/25		BR252		TC26	TVA-1205	
C7	100	500		1469-0001		5W5T1		MC235	MS-31	
C8	33	500		1469-00004		5W5Q33		MC223	MS-43	
C9	.047	400		P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C10	.047	400		P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C11	180	500		1469-0002		5W5T18		MCE237	MS-32	
C12	.001	600		P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C13	220	500		1469-0002		5W5T22		MCE237	MS-32	
C14	.0082	400								
C15	.001	400								
C16	180	500		1469-0002		5W5T18		MCE237	MS-32	
C17	.0047	400		P488-0047	D6-472	CUB4D47	GP2-333-472	PT4247	4TM-D47	
C18	.022	400		P488-022		CUB4S22		PT4122	4TM-S22	
C19	.0012	400								
C20	.022	400		P488-022		CUB4S22		PT4122	4TM-S22	
C21	180	500		1469-0002		5W5T18		MCE237	MS-32	
C22	.0033	400		P488-0033	D6-332	CUB4D33	GP2-333-332	PT4233	4TM-D33	
C23	470	500		1468-0005		5W5T47		MCE245	MS-35	
C24	.001	600								
C25	.015	400								
C26	.022	400		P488-022		CUB4S22		PT4122	4TM-S22	
C27	.022	400		P488-022		CUB4S22		PT4122	4TM-S22	
C28	.022	400		P488-022		CUB4S22		PT4122	4TM-S22	
C29	.0033	400		P488-0033	D6-332	CUB4D33	GP2-333-332	PT4233	4TM-D33	
C30	100	500		1469-0001		5W5T1		MCE235	MS-31	
C31	.022	400		P488-022		CUB4S22		PT4122	4TM-S22	
C32	.0022	400								
C33	680	500		1479-0007		1W5T68			MS-37	
C34	.022	400		P488-022		CUB4S22		PT4122	4TM-S22	
C35	.0047	400		P488-0047	D6-472	CUB4D47	GP2-333-472	PT4247	4TM-D47	
C36	.047	400		P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C37	.047	400		P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C38	.015	400		P488-015		CUB4S15		PT4115	4TM-S15	
C39	.01	400		P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C40	220	500		1469-0002		5W5T22		MCE237	MS-32	
C41	470	500		1468-0007		5W5T47		MCE245	MS-35	
C42	100	500		1469-0001		5W5T1		MCE235	MS-31	
C43	.047	400		P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C44	.015	400		P488-015		CUB4S15		PT4115	4TM-S15	
C45	47	500		1469-00005		5W5Q47		MCE225	MS-45	
C46	.022	400		P488-022		CUB4S22		PT4122	4TM-S22	

CHASSIS—BOTTOM VIEW



PROPERTY OF
F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA H. H. SCOTT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C47	.01	400		P488-01	D6-103	CUB4S1		PT411	4TM-S1	
C48	.022	400		P488-022		CUB4S22		PT4122	4TM-S22	
C49	.001	400								
C50	680	500		1479-0007		1W5T68			MS-37	
C51	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA H.H.Scott PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1Meg	½	RCV-1MT-3F	Q19-137X		BT-71	UT-443	Turnover - tapped ⓐ 600KΩ
R2A	1Meg	½	RCV-1M-3-SWR			AB-68		Roll-off
B	Shaft		Not Req.			AK-9		Attach to R2A
C	Switch		Not Req.			KB-1		Attach to R2A
R3	4000Ω	½	PCV-4000-3F	Q17-114		B-12		Dynaural
R4	1Meg	½	RCV-1MT-3F	Q19-137X		BT-71	UT-443	Bass - tapped ⓐ 600KΩ
R5	1Meg	½	RCV-1MT-3F	Q19-137X		BT-71	UT-443	Treble - tapped ⓐ 600KΩ
R6A	500KΩ	½	RCV-500KTT-4F			ABT-160		Loudness
B	Shaft		Not Req.			AK-3		Attach to R6A
R7A	50KΩ	½	RCV-50K-3	Q14-123		AB-34	U-34	Pre-Amp. Level
B	Shaft		Not Req.	Not Req.		AK-9	Not Req.	Attach to R7A
R8A	100KΩ	½	RCV-100K-38	Q11-128	A47-100K-S	AB-40	U-41	Pickup Load
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R8A
R9A	500KΩ	½	RCV-500K-3	Q13-133	A47-500K-Z	B-60	U-48	Spare Level
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R9A
R10A	500KΩ	½	RCV-500K-3	Q13-133	A47-500K-Z	B-60	U-48	Extra Level
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R10A
R11A	500KΩ	½	RCV-500K-3	Q13-133	A47-500K-Z	B-60	U-48	TV Level
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R11A
R12A	500KΩ	½	RCV-500K-3	Q13-133	A47-500K-Z	B-60	U-48	Tape Level
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R12A
R13A	500KΩ	½	RCV-500K-3	Q13-133	A47-500K-Z	B-60	U-48	Tuner Level
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R13A

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA H.H.Scott PART No.	IRC PART No.	NOTES
R14	4.7Meg	½		BTS-4.7Meg	
R15	4.7Meg	½		BTS-4.7Meg	
R16	4700Ω	½		BTS-4700	
R17	2700Ω	½		BTS-2700	
R18	220KΩ	½		BTS-220K	
R19	68KΩ	½		BTS-68K	
R20	2.2Meg	½		BTS-2.2Meg	
R21	2.2Meg	½		BTS-2.2Meg	
R22	1.5Meg	½		BTS-1.5Meg	
R23	150KΩ	½		BTS-150K	
R24	68KΩ	½		BTS-68K	
R25	270KΩ	½		BTS-270K	
R26	470KΩ	½		BTS-470K	
R27	10KΩ	½		BTS-10K	
R28	4.7Meg	½		BTS-4.7Meg	
R29	2.7KΩ	½		BTS-27K	
R30	270KΩ	½		BTS-270K	
R31	47KΩ	½		BTS-47K	
R32	120KΩ	½		BTS-120K	
R33	10Meg	½		BTS-10Meg	
R34	2.2Meg	½		BTS-2.2Meg	
R35	2.2Meg	½		BTS-2.2Meg	
R36	820Ω	½		BTS-820	
R37	47KΩ	1		BTA-47K	
R38	330KΩ	½		BTS-330K	
R39	470KΩ	½		BTS-470K	
R40	1500Ω	½		BTS-1500	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA H. H. Scott PART No.	IRC PART No.	NOTES
R41	100KΩ	1		BTA-100K	
R42	220KΩ	½		BTS-220K	
R43	220KΩ	½		BTS-220K	
R44	120KΩ	½		BTS-120K	
R45	470KΩ	½		BTS-470K	
R46	2.2Meg	½		BTS-2.2Meg	
R47	4.7Meg	½		BTS-4.7Meg	
R48	1Meg	½		BTS-1Meg	
R49	470KΩ	½		BTS-470K	
R50	1Meg	½		BTS-1Meg	
R51	220KΩ	½		BTS-220K	
R52	10KΩ	½		BTS-10K	
R53	15KΩ	½		BTS-15K	
R54	47KΩ	1		BTA-47K	
R55	4700Ω	½		BTS-4700	
R56	100KΩ	½		BTS-100K	
R57	10Meg	½		BTS-10Meg	
R58	10Meg	½		BTS-10Meg	
R59	2.2Meg	½		BTS-2.2Meg	
R60	10KΩ	½		BTS-10K	
R61	2.2Meg	½		BTS-2.2Meg	
R62	1500Ω	½		BTS-1500	Note 1
R63	33KΩ	½		BTS-33K	
R64	470KΩ	½		BTS-470K	
R65	470KΩ	½		BTS-470K	
R66	100KΩ	1		BTA-100K	
R67	10KΩ	½		BTS-10K	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA H.H.Scott PART No.	IRC PART No.	NOTES
R68	330KΩ	½		BTS-330K	
R69	10KΩ	½		BTS-10K	
R70	1Meg	½		BTS-1Meg	
R71	33KΩ	½		BTS-33K	
R72	1Meg	½		BTS-1Meg	
R73	33KΩ	½		BTS-33K	
R74	1Meg	½		BTS-1Meg	
R75	33KΩ	½		BTS-33K	
R76	560KΩ	½		BTS-560K	
R77	2200Ω	½		BTS-2200	
R78	1500Ω	½		BTS-1500	
R79	100KΩ	1		BTA-100K	
R80	330KΩ	½		BTS-330K	
R81	47KΩ	½		BTS-47K	
R82	47KΩ	½		BTS-47K	Note 1
R83	100KΩ	½		BTS-100K	
R84	100KΩ	½		BTS-100K	Note 1
R85	1Meg	½		BTS-1Meg	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA H.H.Scott PART No.	IRC PART No.	NOTES
R86	2.2Meg	½		BTS-2.2Meg	
R87	2.2Meg	½		BTS-2.2Meg	
R88	1000Ω	½		BTS-1000	
R89	47KΩ	1		BTA-47K	
R90	2.2Meg	½		BTS-2.2Meg	
R91	2.2Meg	½		BTS-2.2Meg	
R92	6800Ω	½		BTS-6800	
R93	6800Ω	½		BTS-6800	
R94	6800Ω	½		BTS-6800	
R95	330KΩ	½		BTS-330K	
R96	680KΩ	½		BTS-680K	
R97	15Ω	8			
R98	2.7Ω 5%	1			
R99	2.7Ω 5%	1			
R100	820Ω	½		BTS-820	
R101	820Ω	½		BTS-820	
R102	820Ω	½		BTS-820	

Note 1. Not used in some versions.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA H. H. Scott PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC ⓐ .27A	474VCT .016ADC	12.6VAC .550ADC							

TONE CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA H. H. Scott PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L1		95Ω							

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA H.H. Scott PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	NOTES
M1 M2	.016A .550A		1017 1263 ①	C1B		126-18C1-Q 604B	16Y1	① Use 4. Connect two in series, then connect both stacks as full wave rectifiers

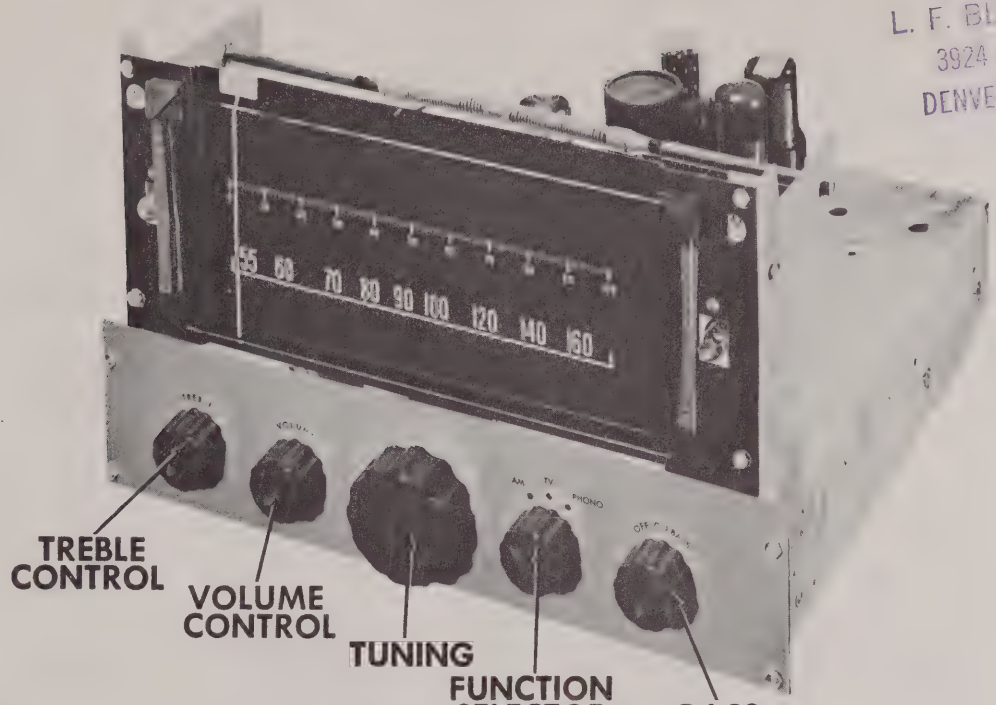
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA H.H. Scott PART No. FUSE	H.H. Scott PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M3	3AG	1/2A 250V			312.500 (1/2A-3AG)	342001	AGC 1/2	HKP

MISCELLANEOUS

ITEM No.	PART NAME	H. H. Scott PART No.	NOTES
M4	Panel Lamp		Neon #51
M5	Switch		Power-on-off
M6	Switch		Input Selector
M7	Switch		Range
M8	Switch		Volume-Loudness

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



SCOTT
MODEL 9052

TRADE NAME	Scott Model 9052
MANUFACTURER	Scott Radio Labs., Inc., Div. of John Meck Ind., 1020 N. Rush St., Chicago 2, Ill.
TYPE SET	AC Operated AM Superheterodyne Receiver With Phono Provisions
TUBES (Seven)	Types 12BE6 Conv., 12A6 IF Amp., 12SQ7 Det.-AVC-AF Amp., 12AU7 AF Amp.-Phase Inverter, (2) 35L6GT Output, 117Z6 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .33 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With tuning gang fully closed set dial pointer to coincide with the zero index mark on the "0" to "100" dial scale. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin77 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	600KC	Tune to 600KC signal	"		If necessary, bend oscillator rotor plates on tuning gang for maximum output at 600KC. Repeat step 2. Remove tape from loop stick antenna and adjust by sliding coil along rod. Adjust for maximum output.
5.		"	1600KC	Tune to 1600KC signal	"	A6	Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

SCOTT MODEL 9052

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: SCOTT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12SQ7	12SQ7	8Q	
V4	AF Amplifier-Phase Inverter	12AU7	12AU7	9A	
V5	Output	35L6	35L6GT	7S	
V6	Output	35L6	35L6GT	7S	
V7	Rectifier	117Z6	117Z6GT	7Q	

CAPACITORS

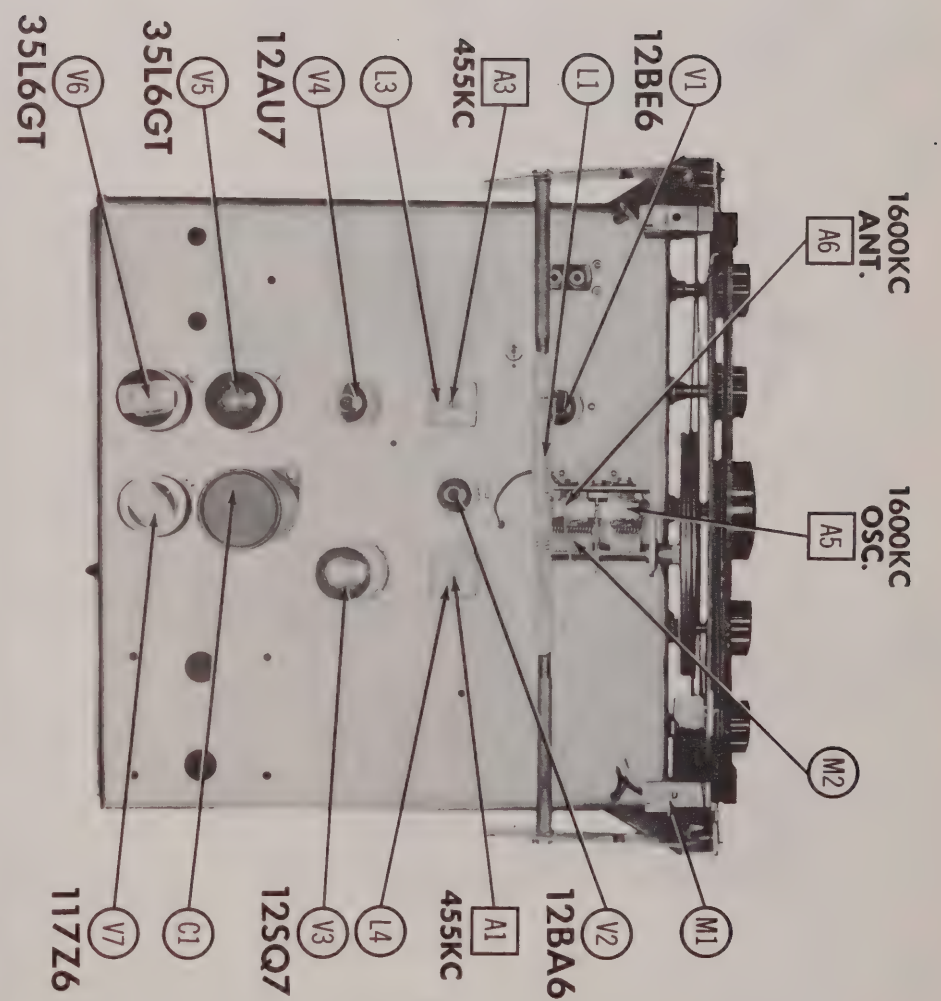
Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SCOTT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	150	CLA-10026	AFH3-42		C033		FP320	TVL-3786	
B	●20	150								
C	■20	150								
C2	10	50	CLA-10091	PRS50/10		BR105		TC32	TVA-1304	
C3	8	250	CLA-10037	PRS250/8		BR825		TC51	TVA-1503	
C4	100	500		1469-0001		22R5T1		MCE235	MS-31	
C5	.1	600		P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C6	50	500	CC-15500	1469-0005		22R5Q5		MCE225	MS-45	
C7	100	500	CCXA-10005	1469-0001		22R5T1		MCE235	MS-31	
C8	.05	600		P6 88-05	DF-503	CUB6S5		PT615	6TM-S5	
C9	.05	600		P688-05	DF-503	CUB6S5		PT615	6TM-S5	
C10	100	500		1469-0001		22R5T1		MCE235	MS-31	
C11	.01	600		P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C12	100		CC-15101	S1100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C13	.02	600		P688-02		CUB6S2		PT612	6TM-S2	
C14	.005	600		P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C15	.01	600		P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C16	.004	400		P488-004	D6-402	CUB4D4	GP2-333-402	PT424	4TM-D4	
C17	.02	600		P688-02		CUB6S2		PT612	6TM-S2	
C18	.05	600		P688-05	DF-503	CUB6S5		PT615	6TM-S5	
C19	.05	600		P688-05	DF-503	CUB6S5		PT615	6TM-S5	
C20	10000		CC-15103	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C21	.02	600		P688-02		CUB6S2		PT612	6TM-S2	
C22	.05	400		P488-05	DF-503	CUB4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SCOTT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	VC-12128	Q13-137	A47-1Meg-Z	B-70-S	U-53	Bass
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWE-20	Not Req.	US-27	Attach to R1A
R1A	500KΩ	½	VC-11112	Q11-133	A47-500K-S	B-59-S	U-50	Bass - Alternate control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-20	Not Req.	US-26	Attach to R1A
R2	500KΩ	½	VCA-11110	Q18-133Y		BT-66	UT429	Volume tapped @ 40KΩ
R3A	1Meg	½	70B570	Q13-137	A47-1Meg-Z	B-70	U-53	Treble
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A
R3A	500KΩ	½	VCA-11111	Q11-133	A47-500K-S	B-59	U-50	Treble - Alternate control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SCOTT PART No.	IRC PART No.	
R4	22KΩ	½		BTS-22K	
R5	100Ω	½		BTS-100	
R6	1Meg	½		BTS-1Meg	
R7	22KΩ	½		BTS-22K	
R8	470KΩ	½		BTS-470K	
R9	470KΩ	½		BTS-470K	
R10	22KΩ	½		BTS-22K	
R11	3900Ω	2		BTB-3900	
R12	220KΩ	½		BTS-220K	Note 1
R13	10KΩ	½		BTS-10K	
R14	47KΩ	½		BTS-47K	
R15	22KΩ	½		BTS-22K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SCOTT PART No.	IRC PART No.	
R16	100KΩ	½		BTS-100K	
R17	2700Ω	½		BTS-2700	
R18	220KΩ	½		BTS-220K	
R19	10KΩ	½		BTS-10K	
R20	10KΩ	½		BTS-10K	
R21	220KΩ	½		BTS-220K	
R22	220Ω	1		BTA-220	
R23	220KΩ	½		BTA-220K	
R24	270Ω	2			
R25	1500Ω	1		BTA-1500	
R26	100Ω	½		BTS-100	Note 2

Note 1. Some models may use a 270KΩ resistor in this application.
Note 2. Some models may use a 47Ω resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SCOTT PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	5.2KΩ	3 - 4Ω	TCA-10062	A-3823	A-2901	S-53X	Z1002	26S46	

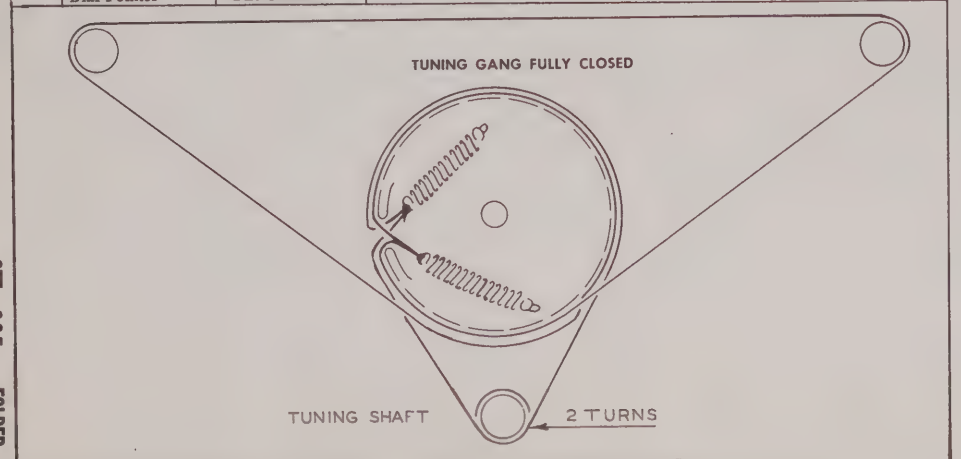
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SCOTT PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.1Ω		ALA-10034				
L2	Osc. Coil	.9Ω	8Ω	TRCA-10031A	14-1040	BC-381 *	70-Osc.	
L3	Input IF	13Ω	13Ω	TSA-10059A	16-6758	BC-352	12-C1	
L4	Output IF	13Ω	13Ω	TSA-10059A	16-6758	BC-353	12-C2	

* Drill mounting hole.

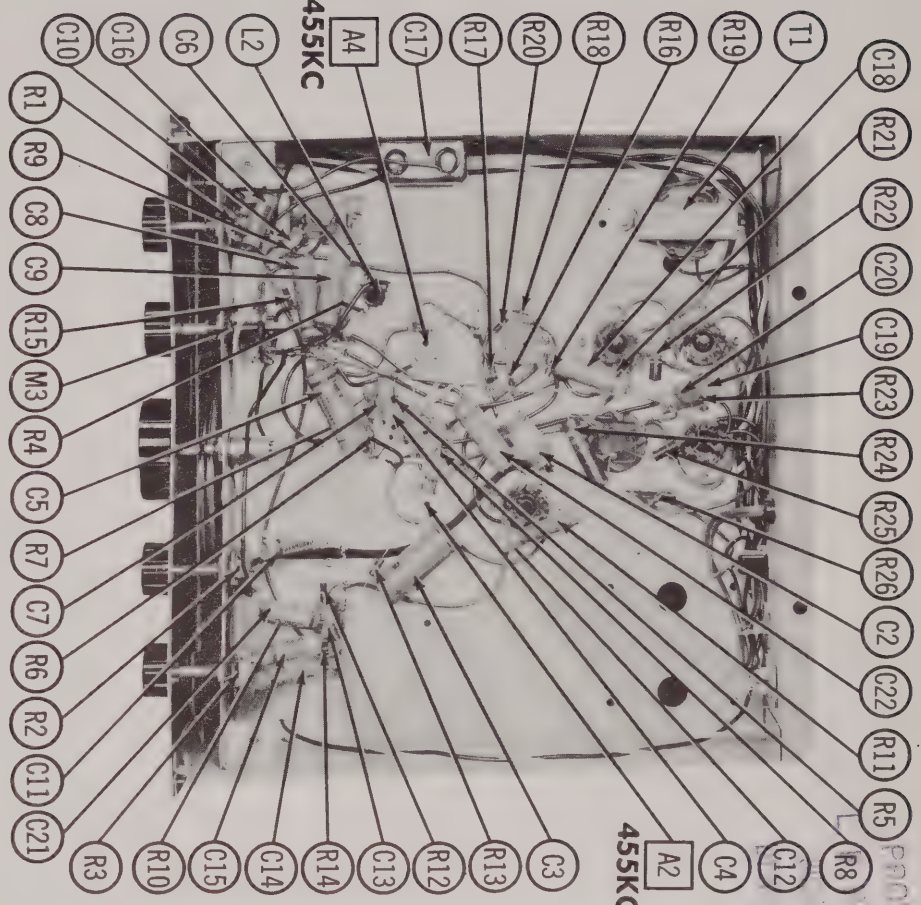
MISCELLANEOUS

ITEM No.	PART NAME	SCOTT PART No.	NOTES
M1	Dial Light		Bayonet #47 (2 used)
M2	Tuning Cap.	CVB-10028	39-462MMF, 30-195MMF
M3	Switch	VSA-10021B	Selector
	Dial Pointer	DIA-10012B	



DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW

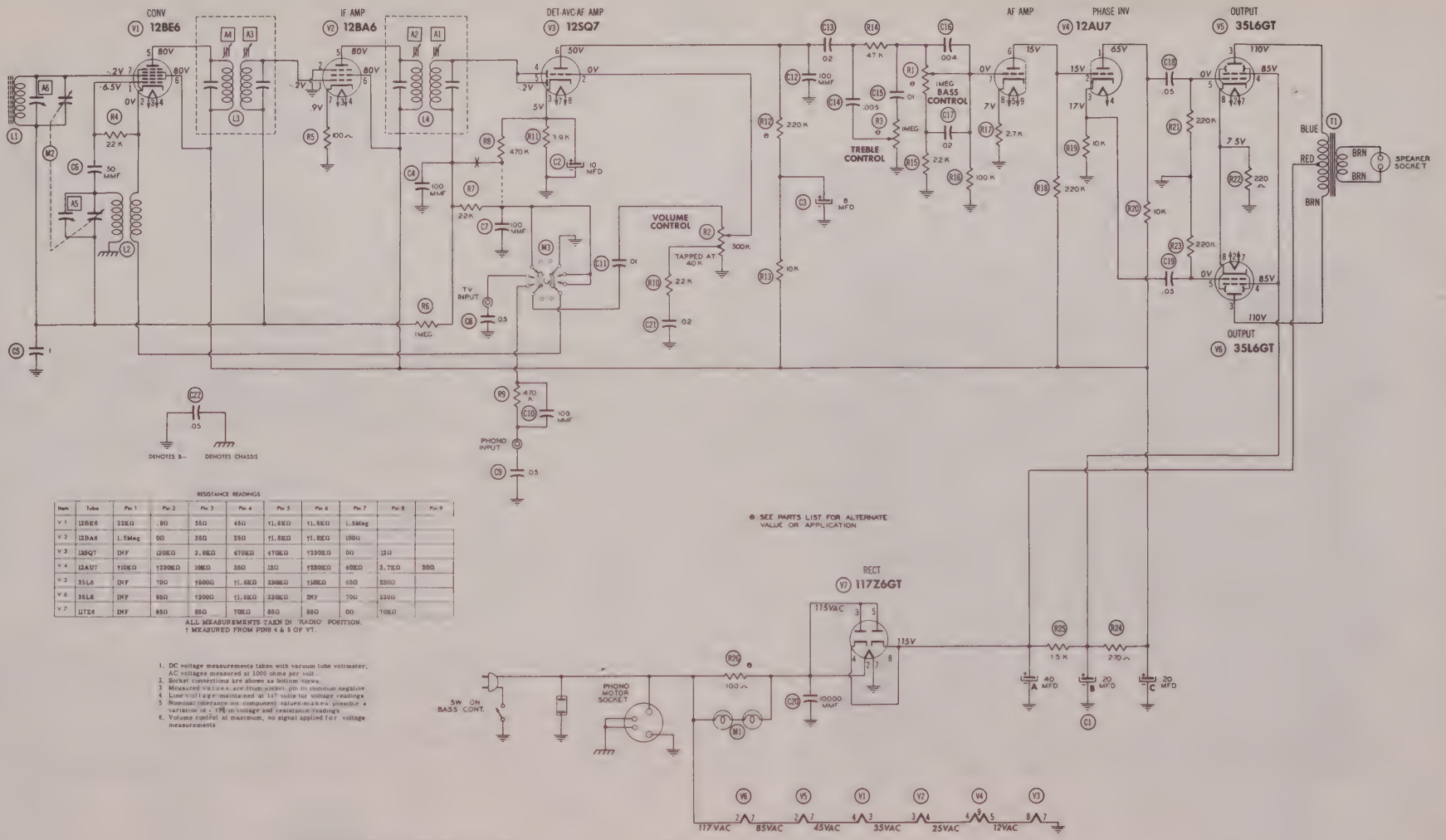


PROPERTY OF

SET 265 FOLDER 12

SCOTT MODEL 9052

SCOTT MODEL 9052



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12BE6	22KΩ	.9Ω	35Ω	45Ω	†1.8KΩ	†1.8KΩ	1.5Meg		
V 2	12BA6	1.5Meg	0Ω	35Ω	35Ω	†1.8KΩ	†1.8KΩ	100Ω		
V 3	12SQ7	INF	120KΩ	2.9KΩ	470KΩ	470KΩ	†230KΩ	0Ω	1Ω	
V 4	12AU7	†10KΩ	†230KΩ	10KΩ	2Ω	1Ω	†230KΩ	40KΩ	3.7KΩ	20Ω
V 5	35L6	INF	70Ω	†300Ω	†1.8KΩ	230KΩ	†10KΩ	65Ω	230Ω	
V 6	35L6	INF	85Ω	†300Ω	†1.8KΩ	220KΩ	INF	70Ω	220Ω	
V 7	U7Z6	INF	85Ω	85Ω	70KΩ	85Ω	85Ω	0Ω	70KΩ	

ALL MEASUREMENTS TAKEN IN 'RADIO' POSITION.
† MEASURED FROM PINS 4 & 8 OF V1.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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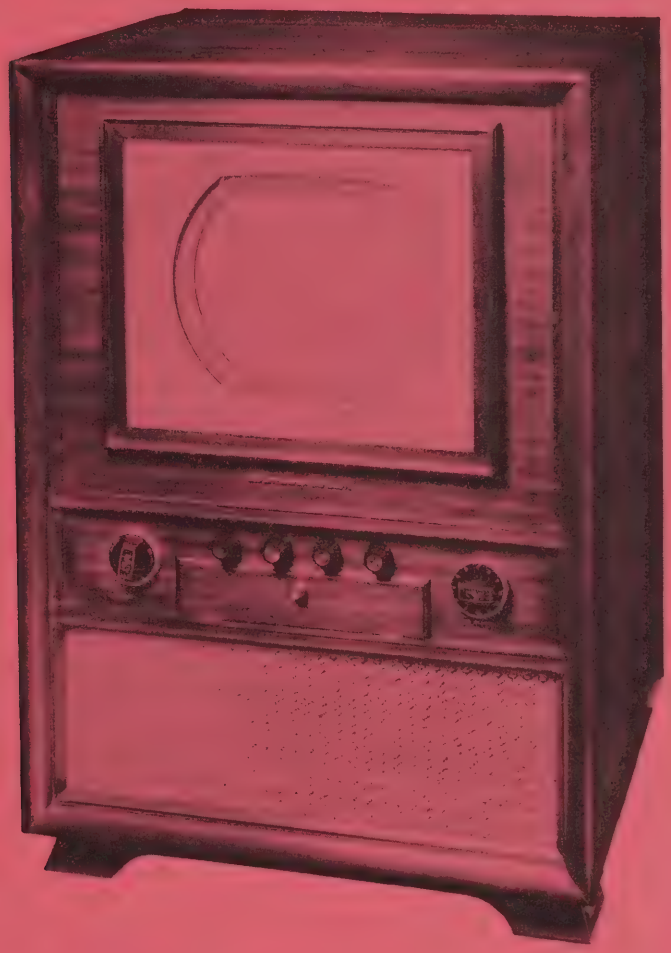

MODEL K-1

STROMBERG-CARLSON
MODEL K-1

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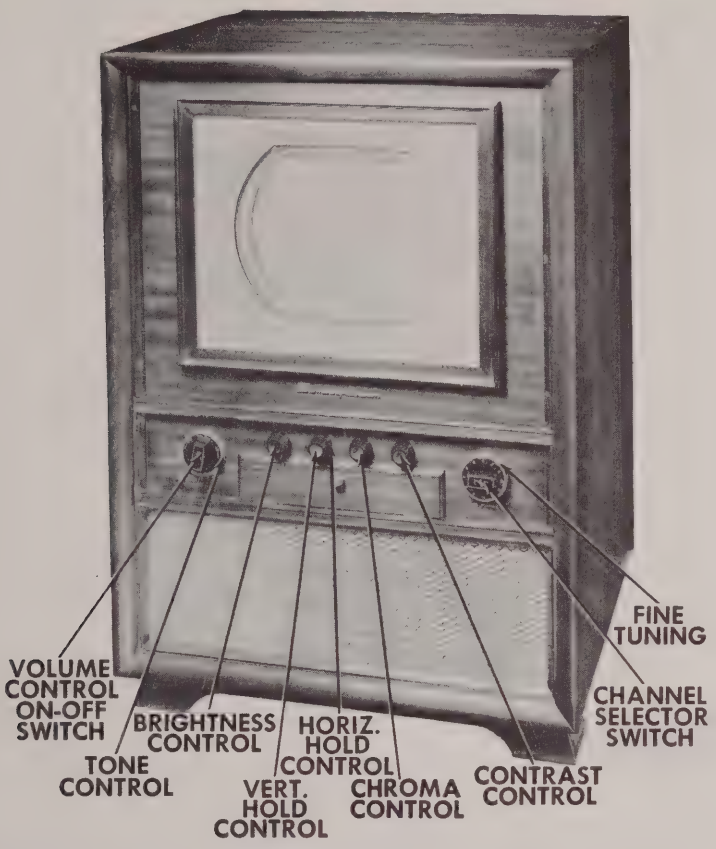
STROMBERG-CARLSON MODEL K-1



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L. F. BLA[illegible]
3924 MEADE ST.
DENVER, COLORADO

STROMBERG-CARLSON
MODEL K-1

TRADE NAME	Stromberg-Carlson Model K-1
MANUFACTURER	Stromberg-Carlson Co. -Service Dept., 302 N. Goodman St., Rochester, N. Y.
TYPE SET	Color Television Receiver
TUBES	Forty-four
POWER SUPPLY	110-120 Volts AC - 60 Cycle RATING 5.5 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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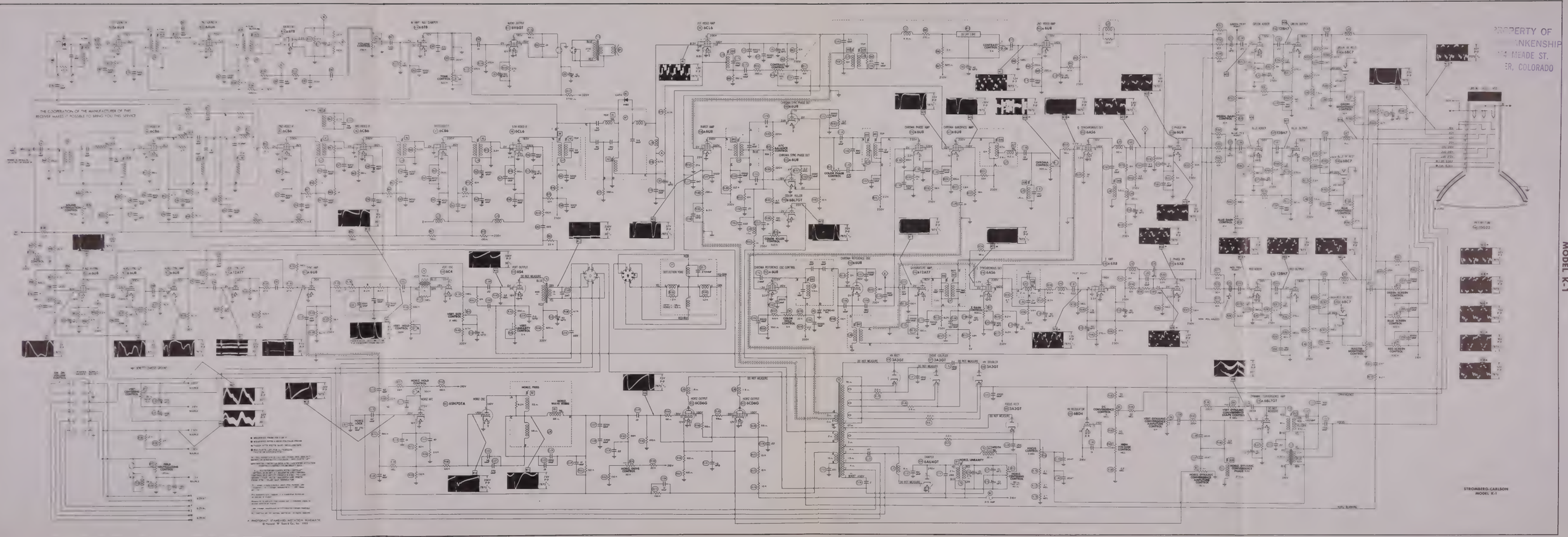
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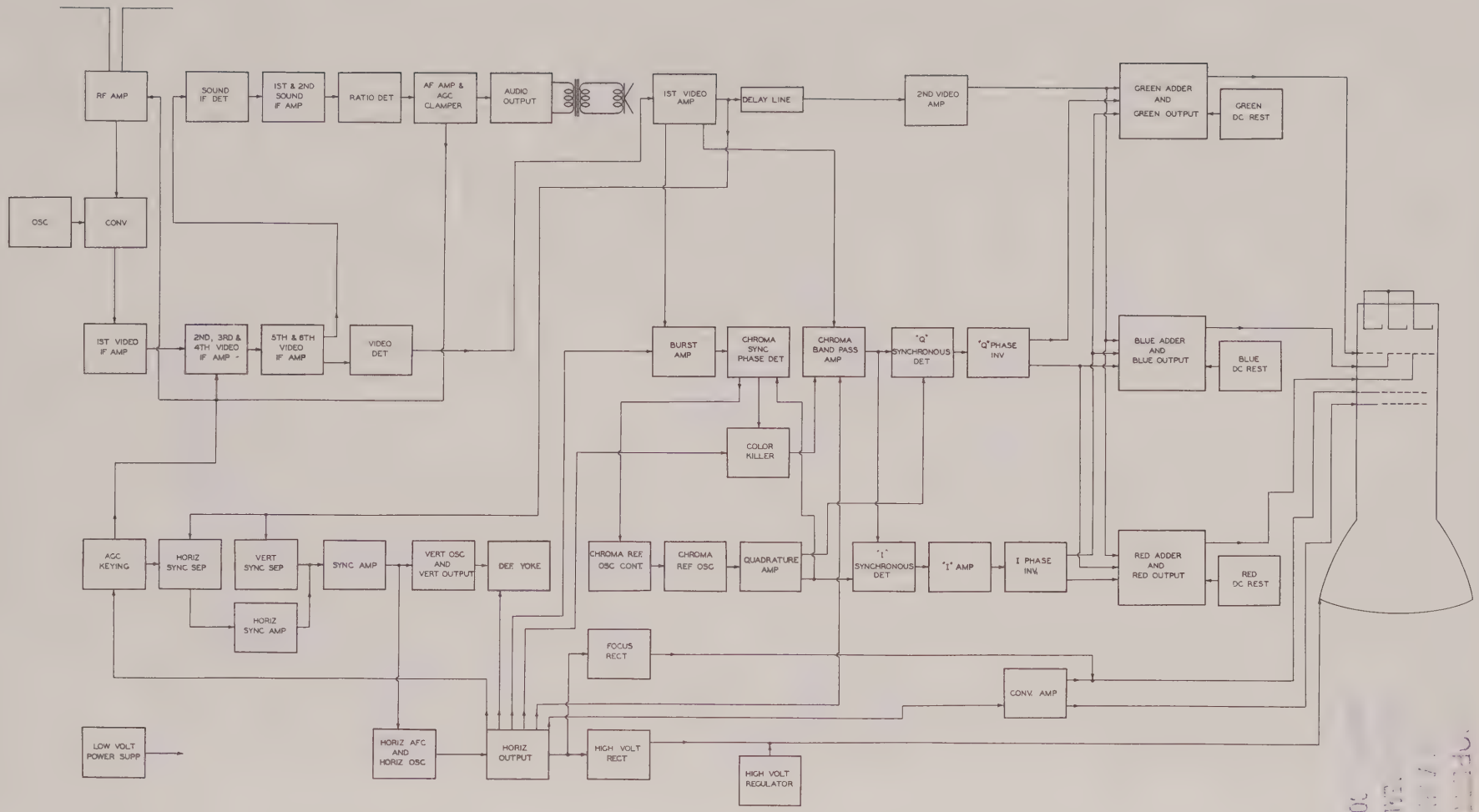
MODEL K-1



BLOCK DIAGRAM

MODEL K-1

STROMBERG-CARLSON

SET 265 FOLDER 13

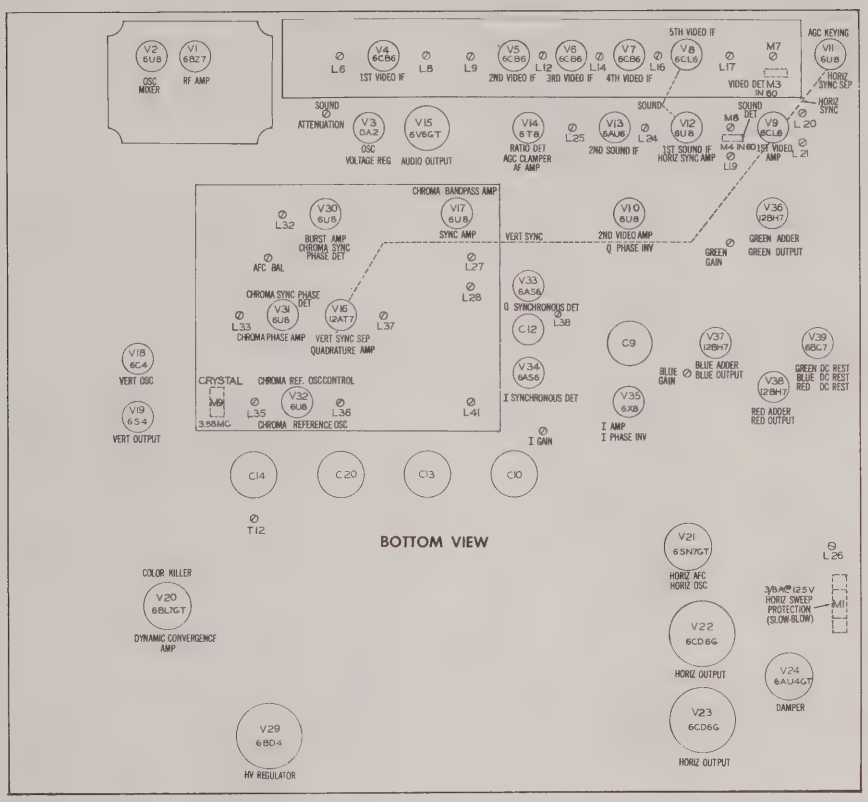
PAGE 3

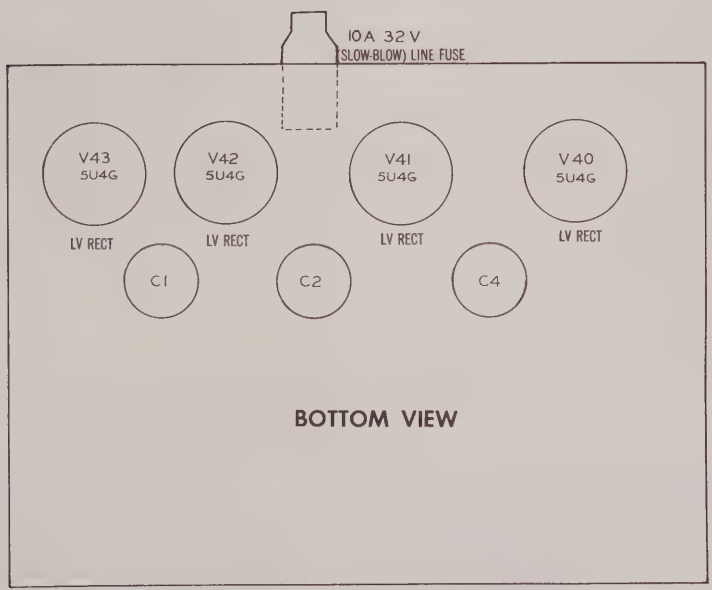
RESISTANCE MEASUREMENTS

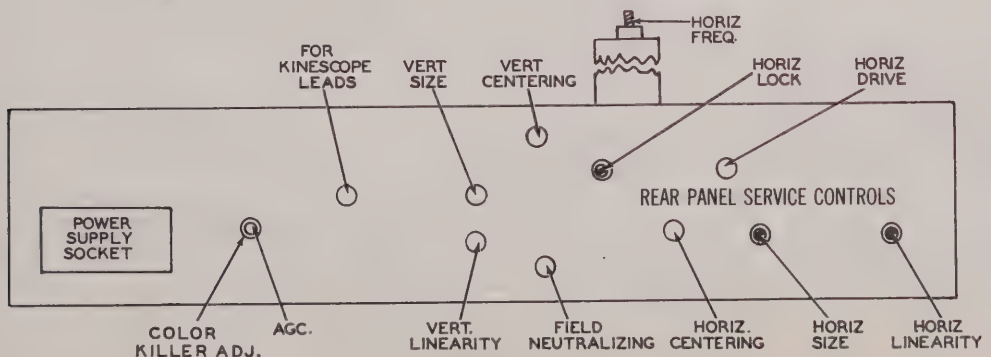
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BZ7	†7.5KΩ	†300KΩ	INF	0Ω	.1Ω	INF	250KΩ	22Ω	0Ω
V 2	6U8	†12KΩ	200KΩ	†100KΩ	.1Ω	0Ω	†13KΩ	0Ω	0Ω	10KΩ
V 3	0A2	†10KΩ	0Ω	INF	0Ω	†10KΩ	INF	0Ω		
V 4	6CB6	48KΩ	68Ω	0Ω	.1Ω	†11KΩ	†47KΩ	0Ω		
V 5	6CB6	47KΩ	68Ω	0Ω	.1Ω	†10KΩ	†47KΩ	0Ω		
V 6	6CB6	48KΩ	68Ω	0Ω	.1Ω	†10KΩ	†47KΩ	0Ω		
V 7	6CB6	.1Ω	150Ω	0Ω	.1Ω	†10KΩ	†47KΩ	0Ω		
V 8	6CL6	150Ω	0Ω	†12KΩ	0Ω	.1Ω	†1KΩ	0Ω	†12KΩ	0Ω
V 9	6CL6	330Ω	9KΩ	†7KΩ	0Ω	.1Ω	†5KΩ	0Ω	†7KΩ	9KΩ
V 10	6U8	†13KΩ	1Meg	†47KΩ	.1Ω	0Ω	†16KΩ	220Ω	3KΩ	220KΩ
V 11	6U8	■5.6KΩ	5Meg	■140Ω	†70Ω	†70Ω	250KΩ	†2.2KΩ	1Meg	†32KΩ
V 12	6U8	†90KΩ	70Ω	†6.4KΩ	.1Ω	0Ω	†6.4KΩ	47Ω	150KΩ	0Ω
V 13	6AU6	15KΩ	0Ω	.1Ω	0Ω	†11KΩ	†11KΩ	0Ω		
V 14	6T8	INF	47KΩ	INF	.1Ω	0Ω	200KΩ	0Ω	10Meg	■470KΩ
V 15	6V6GT	470KΩ	.1Ω	■4.2KΩ	■3.9KΩ	470KΩ	■140Ω	0Ω	270Ω	
V 16	12AT7	†400KΩ	2.2Meg	0Ω	.1Ω	.1Ω	†8.2KΩ	100KΩ	100Ω	0Ω
V 17	6U8	†20KΩ	40KΩ	†27KΩ	0Ω	.1Ω	†70Ω	100Ω	0Ω	†1Meg
V 18	6C4	■1.2Meg	INF	0Ω	.1Ω	■1.2Meg	1.5Meg	0Ω		
V 19	6S4	INF	2KΩ	3.9Meg	.1Ω	0Ω	3.9Meg	INF	INF	■1.4KΩ
V 20	6BL7GT	3.3Meg	■1.1KΩ	1KΩ	100Meg	27KΩ	0Ω	.1Ω	0Ω	
V 21	6SN7GTA	2Meg	■75KΩ	250KΩ	230KΩ	■100KΩ	0Ω	.1Ω	0Ω	
V 22	6CD6G	INF	.1Ω	80Ω	■35KΩ	470KΩ	470KΩ	0Ω	■35KΩ	Top Cap ▲7Ω
V 23	6CB6G	INF	.1Ω	80Ω	■35KΩ	470KΩ	470KΩ	0Ω	■35KΩ	Top Cap ▲7Ω
V 24	6AU4GT	■150Ω	INF	INF	INF	■300Ω	▲.8Ω	.1Ω	0Ω	
V 25	3A3GT	INF	13Meg	INF	INF	INF	INF	13Meg	INF	Top Cap ▲48Ω
V 26	3A3GT	PINS 1-8 HAVE INFINITE RESISTANCE								Top Cap ▲75Ω
V 27	3A3GT	PINS 1-8 HAVE INFINITE RESISTANCE								Top Cap INF
V 28	3A3GT	INF	120 Meg	INF	INF	INF	INF	120Meg	INF	Top Cap INF
V 29	6BD4	■140Ω	†70Ω	INF	INF	2.5Meg	INF	†70Ω	INF	Top Cap 120Meg
V 30	6U8	2.2Meg	3Ω	†70Ω	0Ω	.1Ω	†2.2KΩ	8.4KΩ	100Meg	10KΩ
V31	6U8	2.2Meg	100KΩ	†56KΩ	0Ω	.1Ω	†2.2KΩ	270Ω	10KΩ	100Meg
V32	6U8	†13KΩ	100Meg	†12KΩ	.1Ω	0Ω	†2.2KΩ	330Ω	.8Ω	150KΩ
V33	6AS6	250Ω	150Ω	0Ω	.1Ω	†20KΩ	†17KΩ	600Ω		
V34	6AS6	250Ω	500Ω	0Ω	.1Ω	†6.5KΩ	†17KΩ	600Ω		
V35	6X8	0Ω	1Meg	†4KΩ	.1Ω	0Ω	270Ω	600KΩ	†47KΩ	†4.8KΩ
V36	12BH7	†4.4KΩ	1.2Meg	450Ω	.1Ω	.1Ω	†10KΩ	1.2Meg	390Ω	0Ω
V37	12BH7	†4.4KΩ	1.2Meg	450Ω	.1Ω	.1Ω	†10KΩ	1.2Meg	390Ω	0Ω
V38	12BH7	†4.7KΩ	1.2Meg	450Ω	.1Ω	.1Ω	†10KΩ	1.2Meg	390Ω	0Ω
V39	6BC7	■1Meg	■20-40KΩ	INF	.1Ω	0Ω	■25KΩ	■1Meg	■20-40KΩ	■1Meg
V40	5U4G	25KΩ	25KΩ	INF	55Ω	INF	55Ω	■140Ω	25KΩ	
V41	5U4G	INF	25KΩ	INF	55Ω	■70Ω	55Ω	INF	25KΩ	
V42	5U4G	INF	5.5KΩ	INF	11Ω	INF	11Ω	INF	5.5KΩ	
V43	5U4G	INF	5.5KΩ	INF	11Ω	INF	11Ω	INF	5.5KΩ	
V44	15GP22	†6KΩ	■20KΩ	■1.2Meg	■140Ω-75KΩ		10Meg	■20KΩ	■1Meg	■140Ω - 75KΩ
		Pin 13 90Meg	Pin 17 ■140Ω-75KΩ	Pin 18 ■1Meg	Pin 19 ■20KΩ	Pin 20 †6KΩ				

† MEASURED FROM PIN 2 OF V43.
■ MEASURED FROM PIN 2 OF V41.
▲ MEASURED FROM PIN 3 OF V24.

TUBE PLACEMENT CHART


V2 6U8 OSC MIXER
V1 6BZ7 RF AMP
V4 6CB6 1ST VIDEO IF
V5 6CB6 2ND VIDEO IF
V6 6CB6 3RD VIDEO IF
V7 6CB6 4TH VIDEO IF
V8 6CL6 5TH VIDEO IF
VIDEO DET M3 IN 80
V11 6U8 AGC KEYING
HORIZ SYNC SEP
HORIZ SYNC
SOUND ATTENUATION
V3 0A2 OSC VOLTAGE REG
V15 6V6GT AUDIO OUTPUT
V14 6T8 RATIO DET AGC CLAMPER AF AMP
V13 6AU6 2ND SOUND IF
V12 6U8 1ST SOUND IF HORIZ SYNC AMP
SOUND DET M5 M4 IN 80
V9 6CL8 1ST VIDEO AMP
L19 L20 L21 L24 L25
CHROMA BANDPASS AMP
V30 6U8 BURST AMP CHROMA SYNC PHASE DET
V17 6U8 SYNC AMP
VERT SYNC
V10 6U8 2ND VIDEO AMP Q PHASE INV
V36 28H7 GREEN ADDER GREEN OUTPUT
GREEN GAIN
AFC BAL
CHROMA SYNC PHASE DET
V31 6U8 CHROMA PHASE AMP
V16 12AT7 VERT SYNC SEP QUADRATURE AMP
L27 L28 L33 L37
V33 6AS6 Q SYNCHRONOUS DET
C12 L38
C9
V37 28H7 BLUE ADDER BLUE OUTPUT
BLUE GAIN
V39 6BC7 GREEN DC REST BLUE DC REST RED DC REST
V38 28H7 RED ADDER RED OUTPUT
V18 6C4 VERT OSC
CRYSTAL 3.58MC
CHROMA REF. OSC CONTROL
V32 6U8 CHROMA REFERENCE OSC
L35 L36 L41
V34 6AS6 I SYNCHRONOUS DET
V35 6X8 I AMP I PHASE INV
I GAIN
V19 6S4 VERT OUTPUT
C14 C20 C13 C10
T12
BOTTOM VIEW
V21 6SN7GT HORIZ AFC HORIZ OSC
L26
3/8 AG 125 V HORIZ SWEEP PROTECTION (SLOW-BLOW) M1
COLOR KILLER
V20 6BL7GT DYNAMIC CONVERGENCE AMP
V22 6CD6G HORIZ OUTPUT
V24 6AU4GT DAMPER
V23 6CD6G HORIZ OUTPUT
V29 6BD4 HV REGULATOR





STROMBERG-CARLSON
MODEL K-1

SET 265 FOLDER 13

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Allow a 15 minute warm-up period for receiver and test equipment.
The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube (V21) to disable the high voltage.

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Attenuate sweep generator output to maintain 6 volts peak to peak on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 2 (grid) of 6CL6 (V6). Low side to chassis.	44MC (10MC Swp)	41.25MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10KΩ to point ⊙. Low side to chassis.	A1, A2	Connect a short jumper from pin 1 (grid) of 6CB6 (V4) to chassis. If separate marker generator is used, couple it loosely to grid of V8. Adjust A1 and A2 for MINIMUM marker amplitude (Fig. 1).
2.	"	"	"	41.25MC 41.65MC 46.25MC 47.25MC	"	"	A3, A4	Adjust for response similar to Fig. 1. Repeat step 1. Remove jumper from pin 1 of V4.
3.	"	High side to pin 1 (grid) of 6CB6 (V4). Low side to chassis.	"	41.25MC 41.67MC 45.75MC 47.25MC	"	"	A5, A6, A7, A8	Connect the negative lead of a 7 volt bias supply to the ungrounded side of C77. Connect the positive side to chassis. Leave bias supply connected for remainder of video IF alignment. Adjust A5, A6 and A7 to obtain response similar to Fig. 2. Adjust A8 for MINIMUM marker amplitude at 47.25MC.
4.	"	High side to pin 1 (grid) of 6CB6 (V4). Low side to chassis.	"	39.75MC 41.25MC 41.65MC 45.0MC 45.75MC 47.25MC	"	"	A9, A10, A11, A12	Remove IF output cable plug from tuner. Adjust A9 for MINIMUM marker amplitude at 47.25MC. Adjust A10 for MINIMUM marker amplitude at 39.75MC. Adjust A11 and A12 for response similar to Fig. 3. SLIGHTLY retouch A9 and A10 for MINIMUM marker amplitude. If necessary, increase sweep generator output and scope gain to view trap notches. Replace IF output cable plug on tuner.
5.	Direct	High side to ungrounded tube shield floating over converter tube (V2). Low side to tuner chassis.	44MC (00MC Swp)	39.75MC 41.25MC 41.65MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10KΩ to point ⊙. Low side to chassis.	A13, R36, A14, A15	Increase sweep generator output and adjust scope gain until 41.25MC trap notch is clearly visible. Adjust A13 and sound attenuation control (R36) for MINIMUM marker amplitude at 41.25MC. Readjust sweep generator output for 6 volts peak to peak on scope. Adjust A14 and A15 for response similar to Fig. 4. Recheck adjustment of A13 and R36. Restore converter tube shield to its normal position.
6.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	"	13	"		Connect the high side of the marker generator to the converter tube shield. Leave the low side floating (Be sure converter tube shield is pushed all the way down). Check for an overall response curve similar to Fig. 4 on all channels. Remove bias supply from C77.
			207MC (10MC Swp)		12			
			201MC (10MC Swp)		11			
			195MC (00MC Swp)		10			
			189MC (10MC Swp)		9			
			183MC (00MC Swp)		8			
			177MC (10MC Swp)		7			
			85MC (00MC Swp)		6			
			79MC (10MC Swp)		5			
			69MC (00MC Swp)		4			
			63MC (10MC Swp)		3			
			57MC (10MC Swp)		2			

SOUND IF ALIGNMENT USING TV SIGNAL AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point ⊕ to chassis. The junction of these two resistors is alignment point ⊕ as shown on the schematic.
Tune in any local TV station.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7. Not used	Not used	Not used	Any local channel	DC probe to point ⊕. Common to chassis.	A16, A17, A18, A19	Adjust for maximum deflection (use 0-50VDC scale on VTVM).
8. "	"	"	"	DC probe to point ⊕. Common to point ⊖.	A20	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. (Use 0-3VDC scale on VTVM).

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point ⊕ to chassis. The junction of these two resistors is alignment point ⊕ as shown on the schematic.
Remove IF output cable plug from tuner.

DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7. .01MFD	High side to pin 2 (grid) of 6U8 (V12). Low side to chassis.	4.5MC (Unmod)	Any	DC probe to point ⊕. Common to chassis.	A16, A17, A18, A19	Adjust for maximum deflection.
8. "	"	"	"	DC probe to point ⊕. Common to point ⊖.	A20	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. Replace IF output cable plug on tuner.

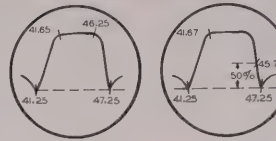


FIG. 1

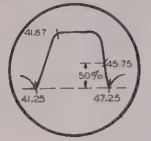


FIG. 2

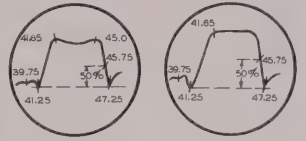


FIG. 3

FIG. 4

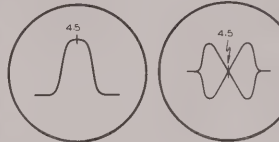


FIG. 5

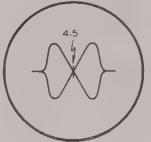


FIG. 6

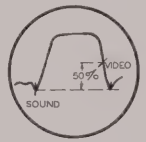


FIG. 7

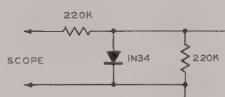


FIG. 8

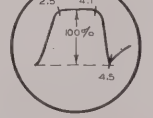


FIG. 9

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.
Remove IF output cable plug from tuner.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	01MFD	High side to pin 2 (grid) of 6U8 (V12). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point ⊙. Low side to chassis.	A16, A17 A18, A19	Disconnect stabilizing capacitor C11. Adjust for curve of maximum amplitude and symmetry similar to Fig. 5.
8.	"	"	"	"	"	Vert. Amp. to point ⊙. Low side to chassis.	A20	Reconnect stabilizing capacitor C11. Adjust so that 4.5MC occurs at center of crossover lines as in Fig. 5. SLIGHTLY retouch A19 for maximum amplitude and straightness of crossover lines. Replace IF output cable plug on tuner.

OSCILLATOR ALIGNMENT

Connect the negative lead of a 7 volt bias supply to the ungrounded side of C77.
Connect the positive side to chassis.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A21. It should be noted that A21 is an all channel oscillator circuit adjustment and should not be used to correct for any individual channel. If adjustment of A21 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency.
The channel oscillator adjustment screws are reached thru a hole just above and slightly to the left of the channel switch shaft. The correct adjustment screw is accessible thru this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	13	Vert. Amp. thru 10KΩ to point ⊙. Low side to chassis.	A22	Adjust to place sound marker in trap notch as in Fig. 7. Video marker should be at 50%.
			207MC (10MC Swp)	12		A23	
			201MC (10MC Swp)	11		A24	
			195MC (00MC Swp)	10		A25	
			189MC (10MC Swp)	9		A26	
			183MC (00MC Swp)	8		A27	
			177MC (10MC Swp)	7		A28	
			85MC (00MC Swp)	6		A29	
			79MC (10MC Swp)	5		A30	
			69MC (00MC Swp)	4		A31	
			63MC (10MC Swp)	3		A32	
			57MC (00MC Swp)	2		A33	

RF AND MIXER ALIGNMENT

The RF and mixer portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion of the receiver should not be required in the field.

COLOR CIRCUIT ALIGNMENT

Set the chroma control and the color hold controls to their mid-range position.
Turn the contrast control maximum clockwise.
Connect an NTSC color bar signal generator thru the matching pad (Fig. 10) to the receivers antenna terminals.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	.001MFD	High side to pin 2 (grid) of 6CL6 (V9). Low side to chassis.	0-6MC Swp.	2.5MC 4.1MC 4.5MC	Any	Vert. Amp. thru detector (Fig. 8) to center arm of chroma control.	A36, A37, A38, A50	Couple marker generator loosely to sweep generator output cable. Short pin 2 (grid) of 6CL6 (V8) and pin 8 (grid) of 6U8 (V32B) to chassis. Connect the negative lead of a 12 volt bias supply to pin 4 (grid) of 6BL7 (V20B). Connect the positive lead to chassis. Adjust A36 and A37 for response similar to Fig. 9. Adjust A38 and A50 to place 4.5MC marker in center of trap notch. If necessary, SLIGHTLY retouch A36 and A37 to obtain desired response. Remove test equipment and bias supply. Remove short from pin 9 of V32.
11.	Fig. 10	Use color bar generator across antenna terminals thru matching network (Fig. 10).	Not used	Not used	Any unused channel	Vert. Amp. thru detector (Fig. 8) to pin 8 (plate) of 6U8 (V32A). Low side to chassis.	A39	Adjust for MINIMUM 3.58MC (burst) indication on on scope.
12.	"	"	"	"	"	Use VTVM. DC probe to pin 8 (cathode) of 6U8 (V32B). Common to chassis.	A40, A41	Adjust for maximum deflection. Remove scope and VTVM.
13.	"	"	"	"	"	Vert. Amp. thru 10KΩ to point ⊙. Low side to chassis.	A42	Short pin 2 (grid) of 6U8 (V30A) to chassis. Adjust for 5 volts peak to peak response on scope. Remove scope.
14.	Fig. 10	Use color bar generator. Across antenna terminals thru matching network.	Not used	Not used	Any unused channel	Use VTVM. DC probe to pin 8 (cathode) of 6U8 (V30B). Common to chassis.	A43, A44	Short pin 2 (grid) of 6CL6 (V8) to chassis. Adjust A43 for maximum deflection. Adjust A44 for maximum deflection while rocking the phase control (R15A) thru its mid-range position. Remove VTVM. Remove short from pin 2 of V8 to chassis and short from pin 3 of V30A to chassis.
15.	"	"	"	"	"	Vert. Amp. thru 10KΩ to pin 8 (cathode) of 6U8 (V10B). Low side to chassis.	A45	Short center arm of AFC balance control to chassis. Adjust A45 until pattern on scope becomes stationary. Remove short from AFC balance control.

STROMBERG-CARLSON
MODEL K-1

ALIGNMENT INSTRUCTIONS (cont)

COLOR CIRCUIT ALIGNMENT (CON'T)

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16.	Fig. 10	Use color bar generator across antenna terminals through matching network.	Not used.	Not used.	Any unused channel.	Vert. Amp. to pin 5 (plate) of "Q" synchronous det. (V33). Low side to chassis.	A46, A47	Adjust for maximum amplitude of pattern on scope.
17.	.01MFD	High side to pin 1 (grid) of "I" synchonous det. (V34). Low side to chassis.	0-5MC Swp	1.5MC	"	Vert. Amp. to pin 9 (plate) of "I" amp. (V35A). Low side to chassis.	A48	Short pin 2 (grid) of bandpass amp. (V17B) to chassis. Adjust A48 for response curve similar to Fig. 14.
18.	"	High side to pin 1 (grid) of "Q" synchronous det. (V33). Low side to chassis.	Not used	3.58MC	"	Vert. Amp. to pin 8 (cathode) of "Q" phase inverter (V10B). Low side to chassis.	A49	Adjust for MINIMUM 3.58MC indication on scope. Remove short from V17.

HORIZONTAL DYNAMIC CONVERGENCE CIRCUIT ADJUSTMENTS

Connect the vertical input lead of an oscilloscope to pin 2 (plate) of convergence amplifier (V20A).
Turn the vertical dynamic convergence amplitude control fully counter clockwise.
Turn the vertical dynamic convergence shape control to the center of its range.
Turn the horizontal dynamic convergence amplitude control to the center of its arange.
Adjust the horizontal dynamic convergence phase adjustment (A34) and the horizontal dynamic convergence output transformer core (A35) for maximum amplitude of waveform on scope.

COLOR AFC BALANCE ADJUSTMENT

Connect a 10MMF capacitor across the chroma reference oscillator crystal.
Connect the DC probe of a VTVM to the center arm of the AFC balance control, common to chassis.
Adjust the AFC balance control for zero reading on VTVM.

"I" & "Q" BALANCE ADJUSTMENT

Connect a color bar generator to the antenna terminals.
Set the generator to produce I & Q color bars.
Connect the vertical input lead of an oscilloscope to pin 9 (plate) of "I" amplifier (V35A).
Adjust the color phase control to reduce the "Q" bar to zero as shown in Fig. 11.
Slight adjustment of A41 may be necessary to obtain proper response. The most desirable condition is attained when proper waveform is obtained with the color phase control at the center of its range.
Connect the oscilloscope vertical input lead to pin 8 (cathode) of the "Q" phase inverter (V10B).
Adjust the secondary of the quadrature transformer (A45) to reduce the "I" bar to zero as shown in Fig. 12.

MATRIX ADJUSTMENT

Connect a saturated color bar generator across the antenna terminal.
Connect the vertical input lead of an oscilloscope to the grid (pin 18) of the picture tube blue gun.
Adjust the chroma control and the "I" gain control until all of the bars containing blue are of equal amplitude.
All bars containing no blue should be at zero amplitude.
Move the scope to the blue and green guns in order and check for proper cancellation of undesired bars.

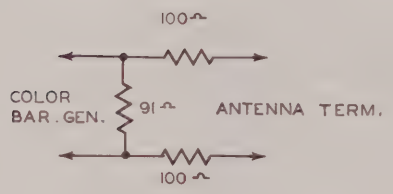


FIG. 10

FIG. 11

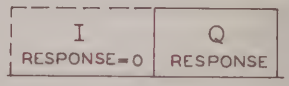


FIG. 12

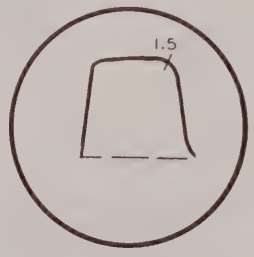
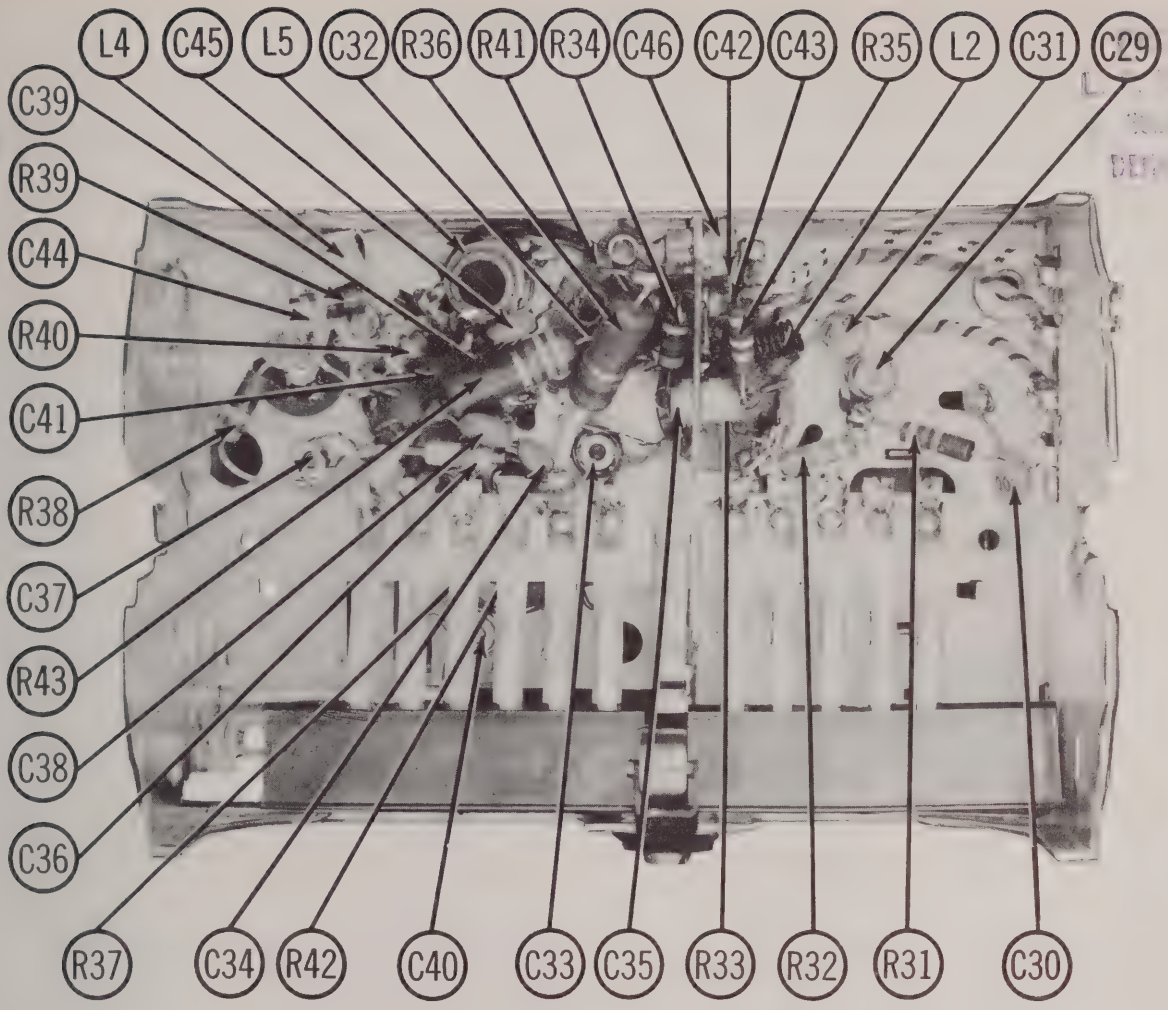


FIG. 14



RF TUNER–BOTTOM VIEW

DISASSEMBLY INSTRUCTIONS

MAIN CHASSIS

1. Remove 9 push-on type control knobs from front of panel.
2. Remove 14 wood screws from rear cover. Remove rear cover.
3. Disconnect picture tube socket, HV lead, power supply plug, speaker plug, field neut. coil plug and deflection yoke plug.
4. Remove 1 metal screw from picture tube mounting ground lead.
5. Remove 5 chassis bolts. Remove chassis.

POWER SUPPLY

1. Remove 4 chassis bolts.
2. Remove 3 wood screws from heat shield.
3. Remove shield and chassis.

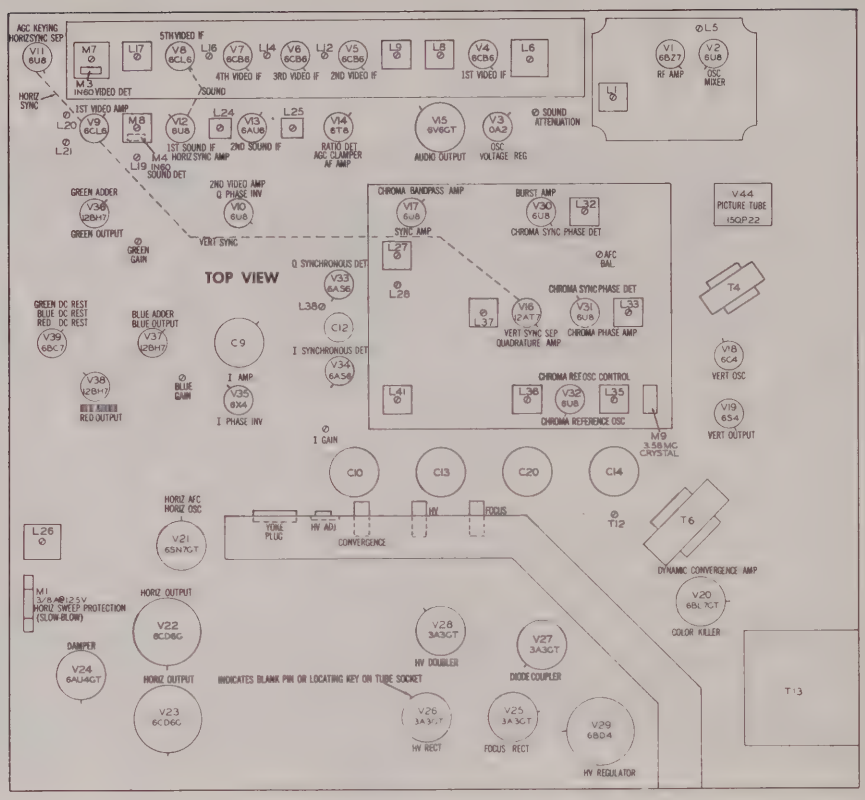
SPEAKER

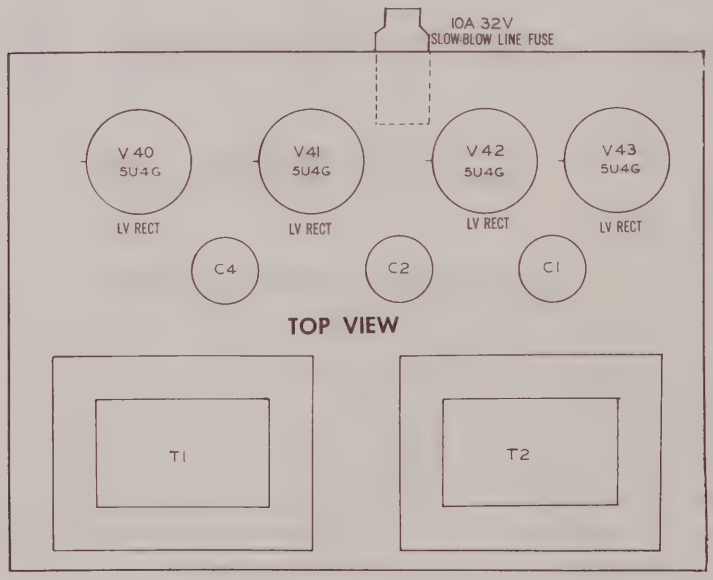
Remove 4 speaker nuts. Remove speaker.

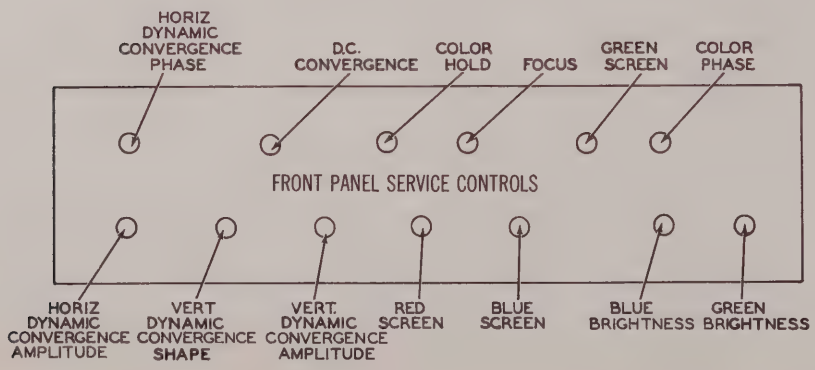
PICTURE TUBE

1. Remove 6 wood screws from safety glass assembly moldings.
2. Remove moldings and safety glass.
3. Remove 2 wing nuts from front tube mounting band.
4. Remove convergence assembly and beam bender assembly.
5. Remove picture tube.

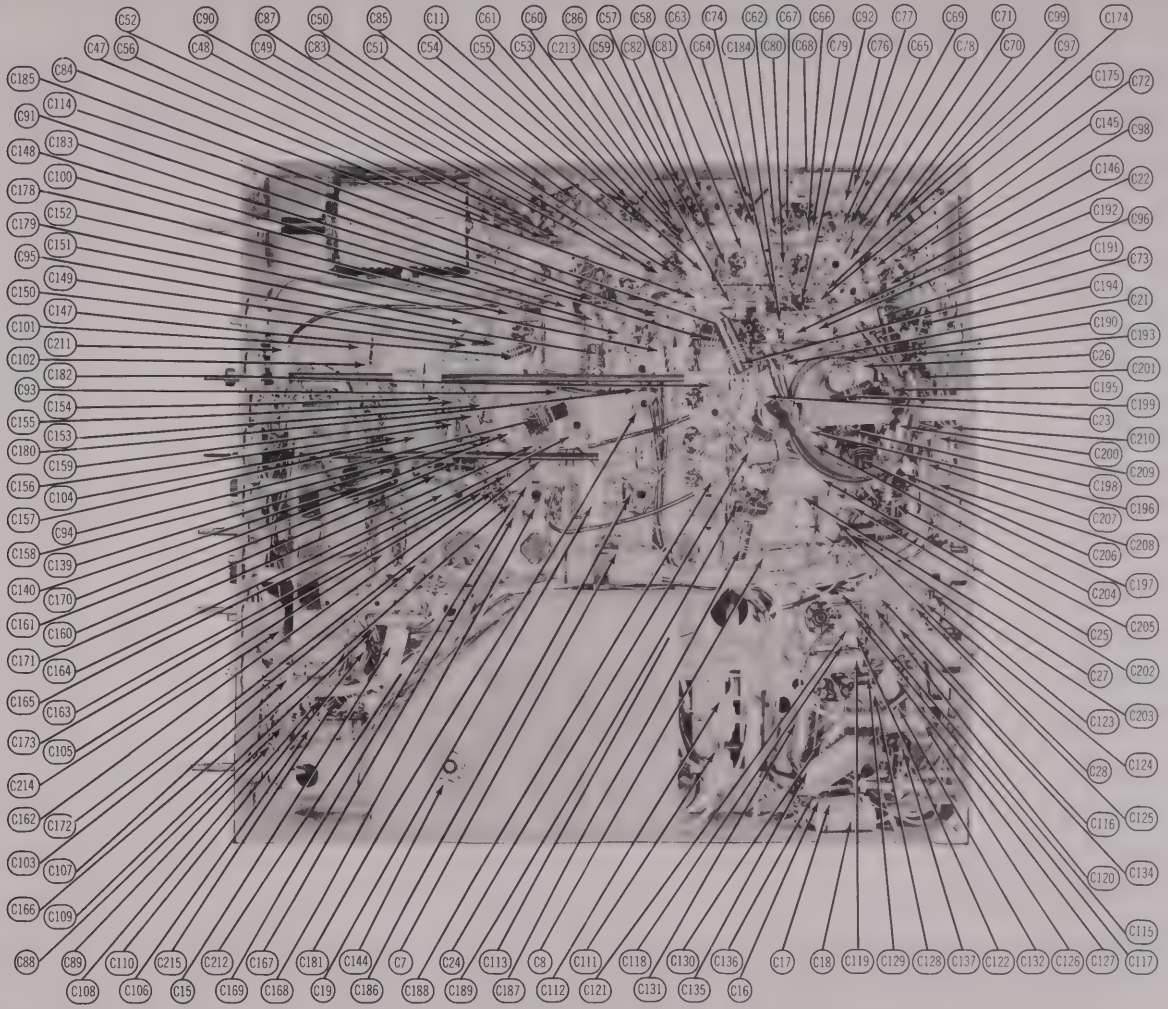
TUBE PLACEMENT CHART





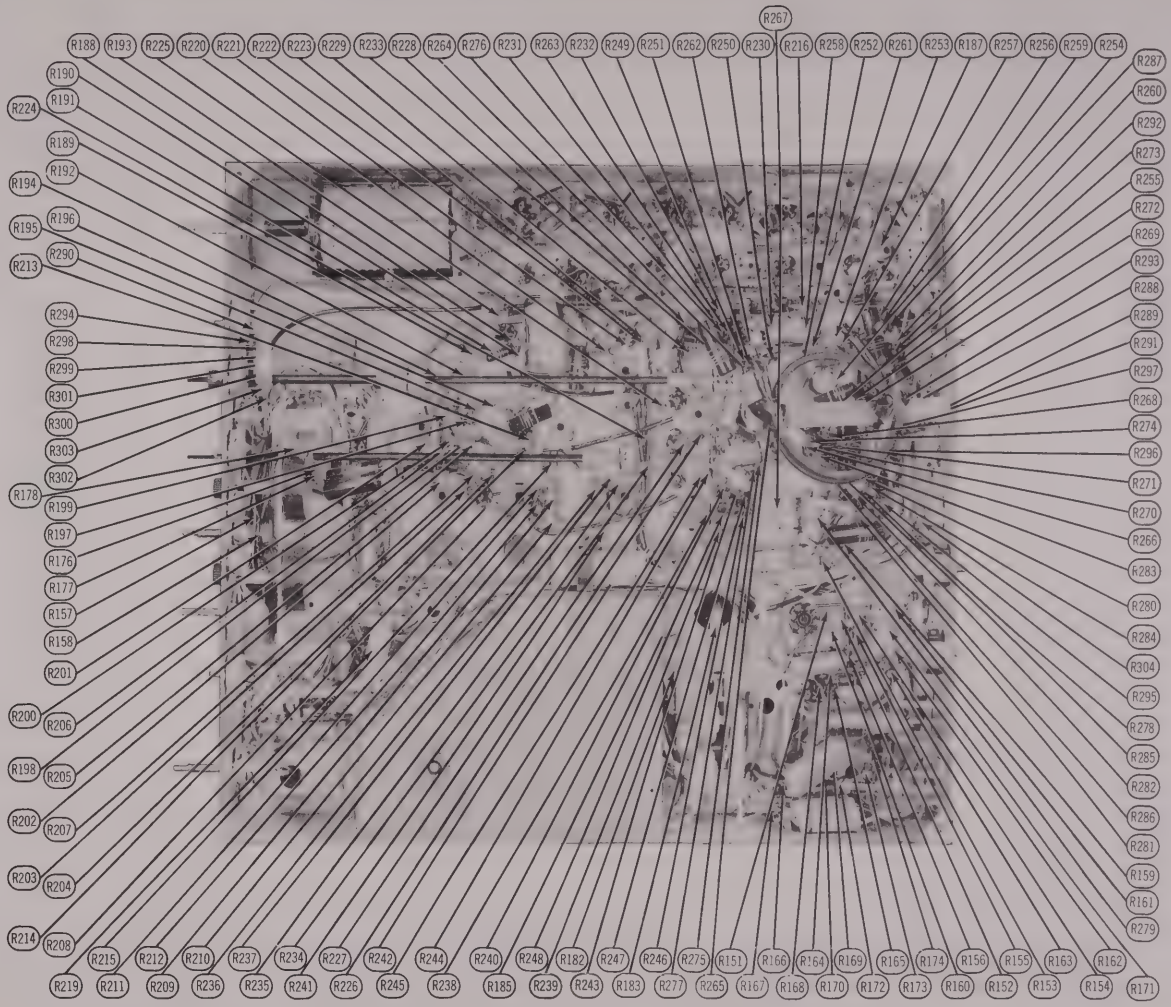


924 MEADE ST.
DENVER, COLORADO

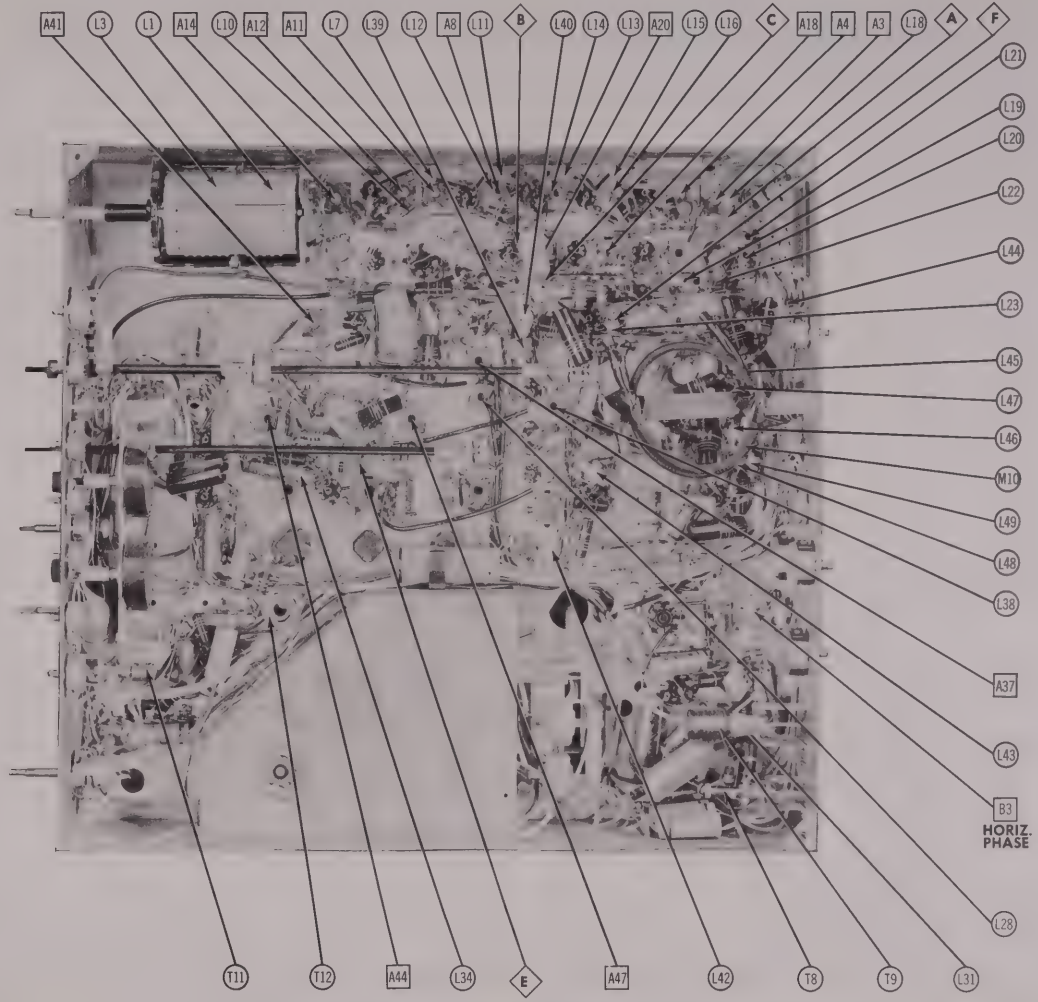


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

PROP!
L. F. BLANKEN
3924 MEADE ST.
DENVER, COLORADO

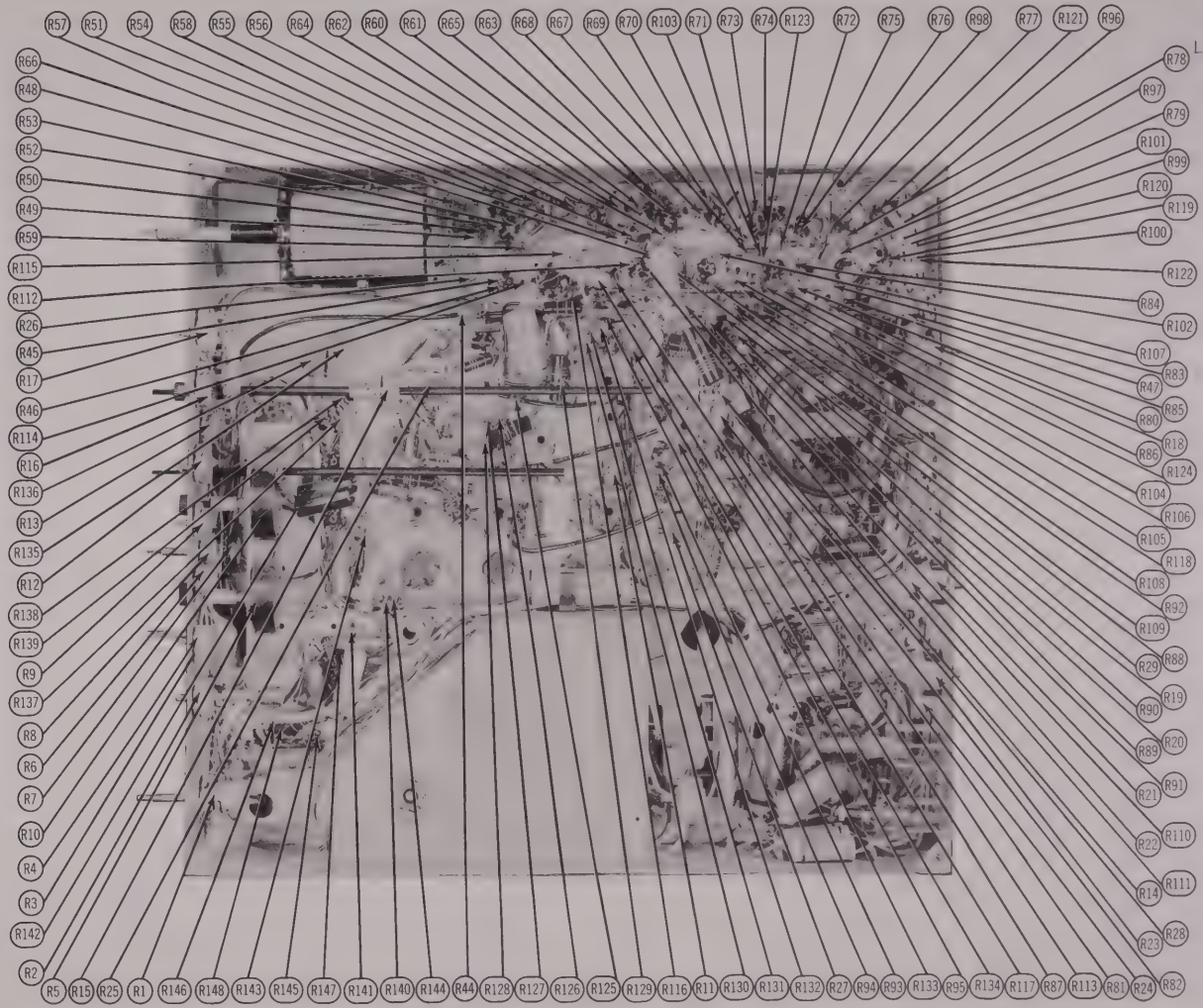


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION (R151—R304)



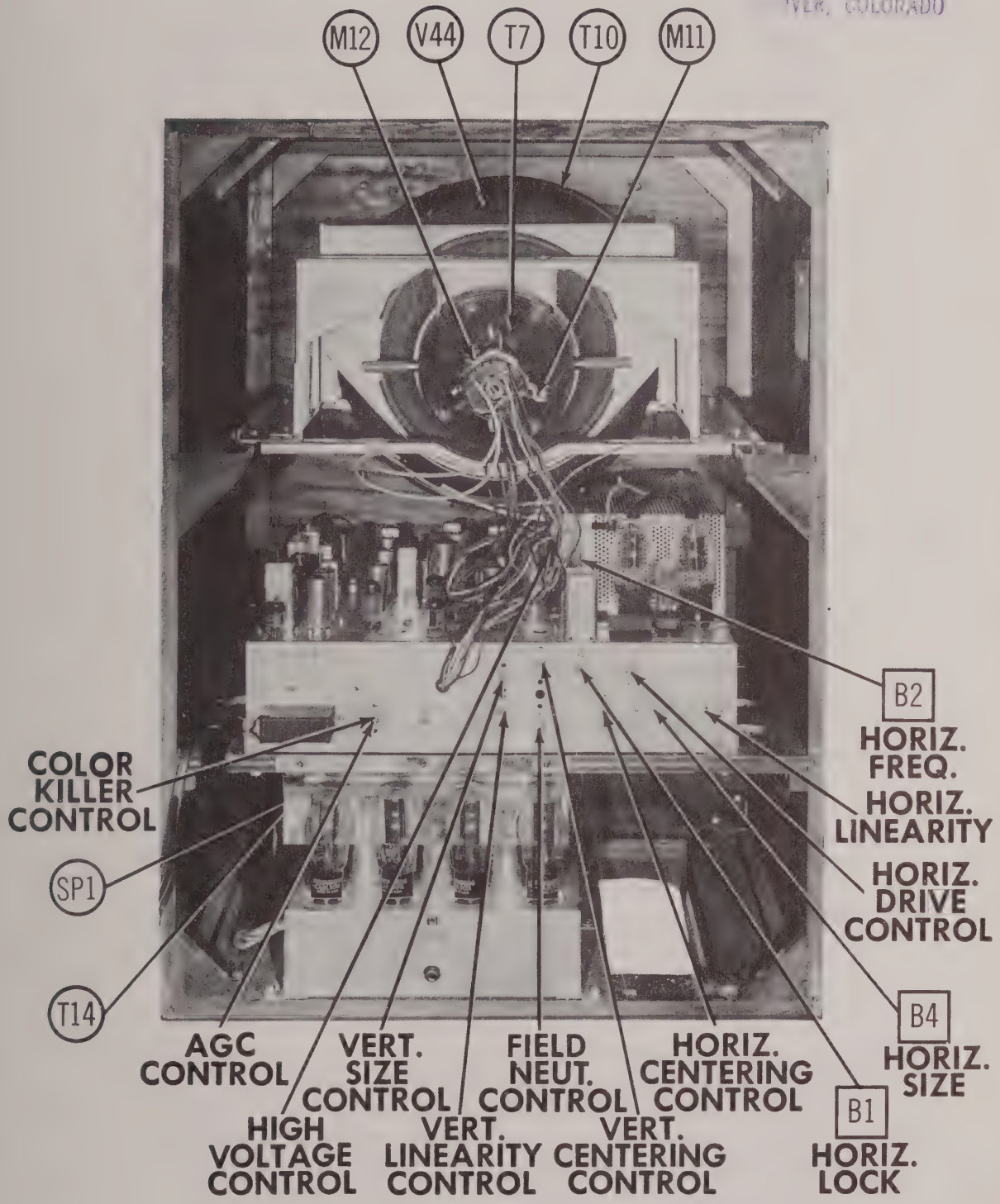
CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

924 MEADE ST
DENVER, COLORADO



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION (R1— R148)

PT. OF
L. F. U. SHIP
3924 DEXTER ST.
DENVER, COLORADO



CABINET-REAR VIEW

MISCELLANEOUS ADJUSTMENTS

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

1. Preset the horizontal drive control (R24A) until the white fold-over line just disappears from the raster.
2. Turn the horizontal locking range trimmer B1 fully clockwise then counter clockwise 2 turns. Adjust the width coil slug (B4) so that the adjusting screw is approximately 2/3 of the way out.
3. Set the horizontal hold control to its mid-range position.
4. If necessary, adjust the horizontal frequency slug (B2) until the picture synchronizes horizontally.
5. Connect the high side of the vertical amplifier of an oscilloscope through 10MMF to terminal "C" of L26. Connect low side to chassis. Adjust the horizontal waveform slug (B3) for response similar to Fig. 13. While adjusting B4, keep picture in sync by readjusting the horizontal hold control or B3.
6. Adjust B4 for picture slightly wider than necessary to fill picture mask horizontally. Adjust B5 for a picture that is symmetrical from left to right. If necessary, readjust horizontal drive control. Retouch B3 for response similar to Fig. 13. Remove scope.
7. Turn the horizontal hold control fully counter clockwise. Momentarily remove signal by switching off channel and back again. If picture remains in sync adjust B2 slightly and again switch off channel and back.

If necessary, repeat this process until picture falls out of sync with diagonal bars sloping down to the left. Turn the horizontal hold control clockwise noting the least number of diagonal bars obtained just before the picture falls in sync. Adjust B1 slightly clockwise if more than three diagonal bars were present just before picture pulled into sync. If less than two bars were present adjust B1 slightly counter clockwise.

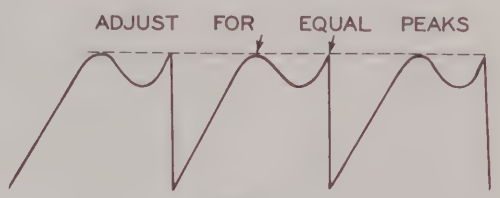


FIG. 13

AGC ADJUSTMENT

Connect the vertical input lead of an oscilloscope thru a 10KΩ isolating resistor to point (A).

Turn the set on and tune in a TV station.

Adjust the AGC control to obtain 4.5 volts peak to peak signal on oscilloscope.

RECEIVER SET UP ADJUSTMENTS

For high voltage adjustment turn the brightness and contrast controls fully counter clockwise. Turn the set off and connect the probe end of a high voltage probe through a short length of high voltage anode lead to the plate of the high voltage regulator tube (6BD4/V29). Slightly raise the cap on top of the tube to make this connection. Turn the set on. Turn the brightness and contrast controls clockwise until a picture appears on the picture tube.

Adjust the DC focus control and the DC convergence control for best focus and convergence in the center portion of the screen. Adjust the high voltage control (R30) for 18KV. Turn brightness control throughout its range. If more than a slight voltage change occurs, slightly readjust R30.

COLOR PURITY ADJUSTMENTS

Turn the contrast control counter clockwise until picture is removed from screen.

Turn the red screen control fully clockwise and the blue and green screen controls fully counter clockwise.

Slide the yoke mounting bracket to the rear as far as possible. (Slide magnet on tube neck toward tube base to provide yoke clearance.)

Alternately slide the yoke mounting bracket forward and adjust the purity magnet until red screen purity is obtained.

If necessary, adjust the field neutralizing control (R21) to remove any contamination at the outer edges of the screen.

Check the blue screen purity by turning the blue screen control fully clockwise and the red and green screen controls fully counter clockwise. Check the green screen purity by turning green screen control fully clockwise and the red and blue screen controls fully counter clockwise.

Turn chroma and contrast controls fully counter clockwise. Turn brightness control fully clockwise.

Adjust red, blue and green screen controls for a low brightness white raster.

CONTINUED ON PAGE 29

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		Stromberg-Carlson PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6BZ7	6BZ7	9AJ	
V2	Mixer Osc.	6U8	6U8	9AE	
V3	Osc. Voltage Reg.	OA2	OA2	5B0	
V4	1st. Video IF Amp.	6CB6	6CB6	7CM	
V5	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V6	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V7	4th. Video IF Amp.	6CB6	6CB6	7CM	
V8	5th. Video IF Amp.	6CL6	6CL6	6CL6	
V9	1st. Video Amp.	6CL6	6CL6	6CL6	
V10	2nd. Video Amp.- "Q" Phase Inv.	6U8	6U8	9AE	
V11	AGC Keying - Horiz. Sync Sep.	6U8	6U8	9AE	
V12	1st. Sound IF Amp.- Horiz. Sync Amp.	6U8	6U8	9AE	
V13	2nd. Sound IF Amp.	6AU6	6AU6	7BK	
V14	Ratio Det.- AGC Clamper- AF Amplifier	6T8	6T8	9E	
V15	Audio Output	6V6GT	6V6GT	7S	
V16	Vert. Sync Sep.- Quadrature Amp.	12AT7	12AT7	9A	
V17	Sync Amp.-Chroma Bandpass Amp.	6U8	6U8	9AE	
V18	Vert. Oscillator	6C4	6C4	6BG	
V19	Vert. Output	6S4	6S4	9AC	
V20	Dynamic Convergence Amplifier- Color Killer	6BL7GT	6BL7GT	8BD	
V21	Horiz. AFC- Horiz. Osc.	6SN7GTA	6SN7GTA	8BD	
V22	Horiz. Output	6CD6G	6CD6G	5BT	
V23	Horiz. Output	6CD6G	6CD6G	5BT	
V24	Damper	6AU4GT	6AU4GT	4CG	
V25	Focus Rectifier	3A3GT	3A3GT	8EZ	
V26	HV Rectifier	3A3GT	3A3GT	8EZ	
V27	Diode Coupler	3A3GT	3A3GT	8EZ	
V28	HV Doubler	3A3GT	3A3GT	8EZ	
V29	HV Regulator	6BD4	6BD4	8FU	
V30	Burst Amplifier- Chroma Sync Phase Detector	6U8	6U8	9AE	
V31	Chroma Sync Phase Detector- Chroma Phase Amplifier	6U8	6U8	9AE	
V32	Chroma Reference Osc. Control - Chroma Reference Osc.	6U8	6U8	9AE	
V33	"Q" Synchronous Detector	6AS6	6AS6	7CM	
V34	"I" Synchronous Detector	6AS6	6AS6	7CM	
V35	"I" Amp.- "I" Phase Inverter	6X8	6X8	9AK	
V36	Green Adder- Green Output	12BH7	12BH7	9A	
V37	Blue Adder - Blue Output	12BH7	12BH7	9A	
V38	Red Adder - Red Output	12BH7	12BH7	9A	
V39	Green DC Rest.- Blue DC Rest.- Red DC Rest.	6BC7	6BC7	9AX	
V40	LV Rectifier	5U4G	5U4G	5T	
V41	LV Rectifier	5U4G	5U4G	5T	
V42	LV Rectifier	5U4G	5U4G	5T	
V43	LV Rectifier	5U4G	5U4G	5T	

PROPERTY OF
E. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA					RETMA BASE TYPE	NOTES
	Stromberg-Carlson PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.		
V44	15GP22		15GP22	15GP22			

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	450	111095	AFH2-57		B045		FP238	TVL-2764	
B	▲40	450								
C2A	▲40	450	111095	AFH2-57		B045		FP238	TVL-2764	
B	▲40	450								
C3	80	300	111086	PRS450/80		BR8045		TCD2274	TVA-1716	
C4A	▲80	300	111087	AFH2-34		B027		FP227.6	TVL-2585	
B	■80	300								
C5	80	300	111086	PRS450/80		BR8045		TCD2274	TVA-1716	
C6	1000	15	111120			BRH1510		TC1505 TC1505	TVA-1163	
C7	1000	15	111120			BRH1510		TC1505 TC1505	TVA-1163	
C8	5	50	111093	PRS150/4		BR550		TC30	TVA-1303	
C9A	■20	450	111104	AFH4-83		D062		FP432.9	TVL-4822	
B	▲40	450							TVA-1310	
C	▲10	450								
D	100	50								

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C10A	■20	450	111094	AFH4-18		D017		FP476	TVL-4840	
B	▲10	450								
C	▲40	450								
D	10	450								
C11	5	50	111093	PRS150/4		BR550		TC30	TVA-1303	
C12A	10	450		AFH3-31		C024		FP375.8	TVL-3776	
B	▲10	450								
C	■10	450								
C13A	▲10	450	111104	AFH4-83		D062		FP432.9	TVL-4822	
B	▲40	450							TVA-1310	
C	■20	450								
D	100	50								
C14A	▲1000	15				B004		WP200	TVL-1230	
B	■1000	15							TVA-1163	
C15	10	50	111035	E26E33		BR105		TC32	TVA-1304	
C16	25	25	111069	PRS25/25		BR252		TC26	TVA-1205	
C17	25	25	111069	PRS25/25		BR252		TC26	TVA-1205	
C18	25	25	111069	PRS25/25		BR252		TC26	TVA-1205	
C19	100	25	110041	PRS25/100		BRH251		TC2501	TVA-1207	
C20A	▲500	12	111122	AFH1-13		A016		WP065	TVL-1330	
B	■500	12		PRS12/500		BRH125		TC1505	TVA-1132	Note 1
C21	2	450	111119	PRS450/4		BR245			TVA-1701	
C22	4	450	111123	PRS450/4		BR445		TC70	TVA-1702	
C23	4	450	111123	PRS450/4		BR445		TC70	TVA-1702	
C24	2	450	111119	PRS450/4		BR245			TVA-1701	
C25	4	450	111071						TVA-1704	Note 2
									TVA-1704	
C26	25	25	111069	PRS25/25		BR252		TC26	TVA-1205	
C27	25	25	111069	PRS25/25		BR252		TC26	TVA-1205	
C28	25	25	111069	PRS25/25		BR252		TC26	TVA-1205	
C29	.5-3				829-3		3115-01-0R5	CT565A		
C30	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C31	3			SI3NP0	TCZ-3	Z007	NP0A-030	ZT-5533	5TCCB-V33	
C32	1.5			SI1.5NP0	TCZ-1.5	Z004	NP0A-1R5	ZT-5515	5TCCB-V15	
C33	.5-3				829-3		3115-01-0R5	CT565A		
C34	47			BPD-470	D6-470	G033	831-470	UC-5447	5GA-Q47	
C35	800			EF-001	MFT-1000				503C-D1	
C36	47									
C37	.5-3				829-3		3115-01-0R5	CT565A		
C38	10									
C39	5									
C40	.5-3				829-3		3115-01-0R5	CT565A		
C41	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C42	800			EF-001	MFT-1000				503C-D1	
C43	800			EF-001	MFT-1000				503C-D1	
C44	220			BPD-221	D6-221	G051	811-221	UC-5322	5GA-T22	
C45	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C46	800			EF-001	MFT-1000				503C-D1	
C47	47		110458	SI47	D6-470	TP29	GP1K-470	UC-5447	5GA-Q47	
C48	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C49	1000		110824	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C50	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C51	100		110460	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C52	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C53	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C54	1000		110824	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C55	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C56	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C57	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C58A	4000		110685	BPD-2X004	D6-402	DK078	822-004	DCD-524	5HK-2D4	
B	4000				D6-402					
C59	1000		110824	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C60	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C61	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C62A	4000		110685	BPD-2X004	D6-402	DK078	822-004	DCD-524	5HK-2D4	
B	4000				D6-402					
C63	1000		110824	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C64A	4000		110685	BPD-2X004	D6-402	DK078	822-004	DCD-524	5HK-2D4	
B	4000				D6-402					
C65	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C66	1000		110824	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C67	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C68	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C69	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C70	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C71	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C72	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C73	.22	400	110548	P488-22		CUB4P22		PT4022	4TM-P22	
C74	1000		110425	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C75	470	2000	110772	HVD20-471	DD30-471		3KV-471	MCL347	20GA-T47	
C76	.47	200	110827	P288-47		CUB2P47		PT4047	2TM-P47	
C77	1.0	100	110823	484-1.0		CUB2W1		PT41	2TM-M1	
C78	1.5		110438	SI1.5NP0	TCZ-1.5	TZ04	NP0A-1R5	ZT-5515	5TCCB-V15	
C79	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C80	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C81	330		110454	SI330	D6-331	TP43	GP2K-331	UC-5333	5GA-T33	
C82	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C83	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C84	680		110465	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C85	.0033	400	110537	P688-0033	D6-332	CUB6D33	GP2-333-332	PT6233	6TM-D33	
C86	.01	400	110540	P488-01	D6-103	CUB4S1	GP2-333-103	PT611	6TM-S1	
C87	5000		110586	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C88	270	500	110260	1468-221	D6-221	5W5T27	GP2K-271	MC241	1FM-33	
C89	.0047	600	110735	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C90	.01	600	110737	P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C91	.01	600	110555	P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C92	.022	400	110542	P488-022	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C93	330		110454	SI330	D6-331	TP43	GP2K-331	UC-533	5GA-T33	
C94	.1	400	110546	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C95	.1	400	110546	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C96	.0068	400	110539	P688-0068	D6-682	CUB6D68	GP2-333-682	PT6268	6TM-D68	
C97	.001	400	110534	P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C98	.0022	400	110536	P688-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C99	.001	1000	110549	P1088-001	DD16-102	CUB16D1	1R5KV-102	PT1621	MB-D1	
C100	270	500	110260	1468-271	D6-221	5W5T27	GP2K-271	MC241	1FM-33	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C101A	2000							PT622		
B	5000		♦128200	♦PA-110	♦PC-100	♦115TM1	♦1405-01	PT625	♦V-1	
C	5000							PT625		
C102	.01	400	110718	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C103	.01	600	110743	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C104	.22	600	110745	684-25		CUB6P25		PT6025	6TM-P22	
C105	.047	1000	110760	P1088-047		CUB16S47		PT16147	MB-S47	
C106	.22	600	110726	684-25		CUB6P25		PT6025	6TM-P22	
C107	.0047	400	110716	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	
C108	.0033	600	110552	P688-0033	D6-332	CUB6D33	GP2-333-332	PT6233	6TM-D33	
C109	.0033	600	110552	P688-0033	D6-332	CUB6D33	GP2-333-332	PT6233	6TM-D33	
C110	.22	600	110745	684-25		CUB6P25		PT6025	6TM-P22	
C111	1000	15000	110838							
C112	1000	15000	110838							
C113	500	20000	110861	HV20C	TV3-502	MMU20T5	413	HV20035A	20DK-T5	
C114	470	500	110263	1468-471	D6-471	5W5T47	GP2K-471	MC245	1FM-35	
C115	82	500	110255	1468-820	D6-820	5W5Q82	GP1K-820		5GA-Q82	
C116	82	500	110255	1468-820	D6-820	5W5Q82	GP1K-820		5GA-Q82	
C117	.1	400	110724	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C118	.01	400	110718	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C119	.47	200	110709	P288-47		CUB2P47		PT4047	2TM-P47	
C120	82	500	110255	1468-820	D6-820	5W5Q82	GP1K-820		5GA-Q82	
C121	270	500	110260	1469-271		5R5T27				
C122	56	500	110253	1469-560	5CZ-56	22R5Q56	NP0K-560		5TCC-Q56	
C123	.01	1000	110540	P1088-01	DD16-103	CUB16S1		PT1611	MB-S1	
C124	1000			SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-S1	
C125	12	500	110245	1469-120	TCZ-12	22R5Q12	NP0K-120		5TCC-Q12	
C126	.22	600	110745	684-25		CUB6P25		PT6025	6TM-P22	
C127	2200	500	110237	1464-222		1R5D22				
C128	2200	500	110237	1464-222		1R5D22				
C129	.01	600	110555	P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C130	.22	600	110745	684-25		CUB6P25		PT6025	6TM-P22	
C131	1.0	100	110823	484-1.0		CUB2W1		PT41	2TM-M1	
C132	100	500	110291	1468-101	D6-101	5W5T1	GP1K-101	MC235	1FM-31	
C133	.001	600	110712	P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C134	12	500	110245	1469-120	TCZ-12	22R5Q12	NP0K-120		5TCC-Q12	
C135	.47	600	110747	684-5		CUB6P5		PT605	6TM-P47	
C136	.1	600	110561	P688-1		CUB6P1		PT601	6TM-P1	
C137	.068	400	110545	P488-068		CUB4S68		PT4168	4TM-S68	
C138	1200	15000	110834							
C139	.0047	6000	110839	6084-005		CUB60D5		OW625	TVM-256	
C140	.0047	6000	110839	6084-005		CUB60D5		OW625	TVM-256	
C141	1200	15000	110834							
C142	1200	15000	110834							
C143	2000	30000	110835							
C144	.01	400	110718	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C145	3.5		110836							
C146	56	5000	110313	1469-560	TCZ-56	22R5Q56	NP0K-560		5TCC-Q56	
C147	.0022	600	110536	P688-0022	D6-222	CUB6D22	GP2-333-222	PT6222	6TM-D22	
C148	2.0	50	110675							
C149	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C150	.01	400	110540	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C151	.01	400	110540	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C152	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C153	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C154	33		110486	SI33	D6-330	TP27	GP1K-330	UC-5433	5GA-Q33	
C155	250	500	110304	1468-251	D6-251	5W5T25	GP2K-250	MC240	1FM-325	
C156	680	500		1469-681		5R5T6 8			MS-37	
C157	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C158	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C159	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C160	.25	100	110770	P288-25		CUB2P25		PT4025	2TM-P25	
C161	.022	400	110542	P488-022	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C162	2		110833	SI2.2NP0	TCZ-2.2	Z005	NP0A-2R2		5TCCB-V22	
C163	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C164	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C165	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C166	5		110837	SI5NP0	TCZ-4.7	Z011	NP0K-050	ZT-555	5TCCB-V47	
C167	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C168	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C169	680		110278	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C170	1800	500	110268	1464-182		1R5D18				
C171	100		110451	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C172	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C173	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C174	330		110463	SI330	D6-331	TP43	GP2K-331	UC-5333	5GA-T33	
C175	180		110841							
C176	.5	100	110771	P288-5		CUB2P5		PT405	2TM-P5	
C177	.047	600	110559	P688-047	DF-503	CUB6S47		PT6147	6TM-S47	
C178	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C179	.01	400	110540	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C180	33		110486	SI33	D6-330	TP27	GP1K-330	UC-5433	5GA-Q33	
C181	150	500	110257	1469-151		5R5T15		MCB236		
C182	27			SI27	D6-270	TP26	GP1K-270	UC-5427	5GA-Q27	
C183	.1	400	110546	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C184	3.5		110836							
C185	27		110485	SI27	D6-270	TP26	GP1K-270	UC-5427	5GA-Q27	
C186	120	500	110256	1468-121	D6-121	5R5T12	UC-5312	MC236	5GA-T12	
C187	.022	400	110542	P488-022	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C188	3.5		110836							
C189	.022	400	110542	P488-022	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C190	.25	100	110770	P288-25		CUB2P25		PT4025	2TM-P25	
C191	.22	400	110548	P488-22		CUB4P22		PT4022	4TM-P22	
C192	560	500	110264	1468-561	D6-561	5W5T56	GP2K-561	UC-5356	5GA-T56	
C193	.1	400	110546	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C194	.047	400	110544	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C195	.1	200	110661	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C196	.25	100	110770	P288-25		CUB2P25		PT4025	2TM-P25	
C197	.22	400	110548	P488-22		CUB4P22		PT4022	4TM-P22	
C198	560	500	110264	1464-561	D6-561	5W5T56	GP2K-561	UC-5356	5GA-T56	
C199	.1	400	110546	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C200	.047	600	110544	P688-047	DF-503	CUB6S47		PT6147	6TM-S47	
C201	.1	200	110661	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C202	.25	100	110770	P288-25		CUB2P25		PT4025	2TM-P25	
C203	.22	400	110548	P488-22		CUB4P22		PT4022	4TM-P22	
C204	560	500	110264	1468-561	D6-561	5W5T56	GP2K-561	UC-5356	5GA-T56	
C205	.1	400	110546	P488-1	DF-104	CUB4P1		PT401	4TM-P1	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No	RATING CAP.	VOLT	Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
				REPLACEMENT DATA						
C206	.047	400	110544	P488-047	DF-503	CUB4847		PT4147	47M-847	
C207	.1	200	110661	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C208	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5BK-81	
C209	10000		110672	BPD-01	DD-103	K083	811-01	DC-511	5BK-81	
C210	10000		110672	BPD-01	DD-103	K083	811-01	DC-511	5BK-81	
C211	.1	400	110724	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C212	.01	400	110718	P488-01	DS-103	CUB4S1	GP2-333-103	PT41	4TM-81	
C213	56									
C214	2.0	50	110675							
C215	.047	400	110544	P488-047	DF-503	CUB4847		PT4147	47M-847	
C216	.022	400	110542	P488-022	DF-303	CUB4S23	817-02	PT4123	47M-823	
C217	270	5000								
C218	.01	1000		P1088-01	DD16-103	CUB1681		PT1611	MB-81	

Note 1. C208 is not used.
Note 2. Non-polarized unit.
• Items C104A, C104B, C104C, R136A, R136B, R136C are combined in one unit.

CONTROLS

ITEM No	RATING RESIST-ANCE	WATTS	Stromberg-Carlson PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
				REPLACEMENT DATA				
R1A	500KΩ	½	145187		UF5R		UF5R	Tone-Panel
B	250KΩ	½			UR254A		UR254A	Volume-Rear
C	Switch				US-36			Attach to R1B
R2	100Ω	½	145168					Horiz. Dynamic Convergence Amplitude
R3A	10KΩ	2	145172	WK-10, 000	A43-10K	V-137	R10, 000L	Master Brightness Wire-Wound
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R3A
R4A	6Meg	½	145100	Q11-143	A47-5Meg-S	AB-89	U-83	Vert. Dynamic Convergence Shape
B	Shaft		Not Req.	RQ	FS3-1/4	AK-1	Not Req.	Attach to R4A
R5	15Meg	½	145018					DC Convergence
R6A	10KΩ	½	145132	Q11-116	A47-10K-S	AB-14	SU-30	Vert. Dynamic Convergence Amplitude
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R6A
R7A	500KΩ	½	145148	Not Req. QJ-429		FI-40		Horiz. Hold-Panel
B	500KΩ	½				R2-51		Vert. Hold-Rear
R8A	5000Ω	½	145079	Q11-114	A47-5000-S	AB-10	SU-14	Color Hold
B	Shaft		Not Req.	RQ	FK3-1/4	AK-1	Not Req.	Attach to R8A
R9A	500KΩ	½	145147	Q11-133	A47-500K-S	AB-59	SU-50	Red Screen
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R9A
R10	5Meg	½	S150017					Focus
R11A	500Ω	½	145184	Q11-103	A47-500-S	B-4	U-2	Chroma
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R11A
R12A	500KΩ	½	145147	Q11-133	A47-500K-S	AB-59	SU-50	Blue Screen
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R12A
R13A	500KΩ	½	145147	Q11-133	A47-500K-S	AB-59	SU-50	Green Screen
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R13A
R14A	500Ω	½	145176					} Contrast
B	1500Ω	½						
R15A	10KΩ	½	145132	Q11-116	A47-10K-S	AB-14	SU-30	Color Phase
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R15A
R16A	50KΩ	½	145147	Q11-123	A47-50K-S	AB-35	U-35	Blue Brightness
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R16A
R17A	50KΩ	½	145167	Q11-123	A47-50K-S	AB-35	U-35	Green Brightness
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R17A
R18A	500KΩ	½	145161	QJ-608		FI-40	UF55L	Color Killer
B	500KΩ	½				FI-40	UR55L	AGC
R19A	3Meg	½	145166	Q11-139	A47-2Meg-S	AB-75	U-58	Vertical Size
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R19A
R20A	500Ω	½	145079	Q11-114	A47-500-S	AB-10	SU-14	Vertical Linearity
B	Shaft		Not Req.	RQ	FK3-1/4	AK-1	Not Req.	Attach to R20A
R21A	20Ω	2	145173	W-20	A43-20	VK-20	R20L	Field Neutralizing Wire-Wound
B	Shaft		Not Req.	Not Req.	FK3-1/4	Not Req.	Not Req.	Attach to R21A
R22	20Ω	2	145018	W20X10	RTV-98	SVT-901	R20CT	Vert. Centering Tapped at 10Ω
R23	80Ω	2	145169		RTV-339			Wire-Wound Horiz. Centering Tapped at 40Ω Wire-Wound
R24A	50KΩ	½	145167	Q11-123	A47-50K-S	AB-31	U-35	Horiz. Drive
B	Shaft		Not Req.	Not Req.	FK3-1/4	AK-1	Not Req.	Attach to R24A
R25A	50KΩ	½	145179	Q11-123	A47-50K-S	AB-31	U-35	AFC Balance
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R25A
R26	750Ω	½	145175					Sound Attenuation
R27A	300Ω	½	145178	Q11-103	A47-500-S	AB-4	U-2	1'Cnls
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R27A
R28	10KΩ	½	145177					Blue Gain
R29	10KΩ	½	145177					Green Gain
R30A	1Meg	½	145174	Q11-137	A47-1Meg-S	AB-70	SU-54	High Voltage
B	Shaft		Not Req.	RQ	FK3-1/4	AK-1	Not Req.	Attach to R30A

RESISTORS

ITEM No.	RATING OHMS	WATT	Stromberg-Carlson PART No.	IRC PART No.	NOTES
			REPLACEMENT DATA		
R31	47KΩ	½		BTS-47K	
R32	22KΩ	½		BTS-22K	
R33	33Ω	½		BTS-33	
R34	820KΩ	½		BTS-820K	
R35	470KΩ	½		BTS-470K	
R36	1500Ω	1		BTA-1500	
R37	4700Ω	½		BTS-4700	
R38	100KΩ	½		BTS-100K	
R39	100KΩ	½		BTS-100K	
R40	100KΩ	½		BTS-100K	
R41	8200Ω	½		BTS-8200	
R42	10KΩ	½		BTS-10K	
R43	3300Ω	1		BTA-3300	
R44	4700Ω	2	149080	BTB-4700	
R45	18KΩ	2	149057	BTB-18K	
R46	18KΩ	2	149057	BTB-18K	
R47	10Meg	½	149128	BTS-10Meg	
R48	330Ω	½	28153	BTS-330	
R49	330Ω	½	28153	BTS-330	
R50	1000Ω	½	149101	BTS-1000	

RESISTORS (cont)

ITEM No	RATING OHMS	WATT	Stromberg-Carlson PART No.	IRC PART No.	NOTES
			REPLACEMENT DATA		
R51	68Ω	1	28144	BTS-68	
R52	4.7KΩ	1	149405	BTA-47K	
R53	10KΩ	2	149078	BTB-10K	
R54	2700Ω	1	28163	BTS-2700	
R55	18Ω	½	28136	BTS-18	
R56	68Ω	1	28144	BTS-68	
R57	47KΩ	1	149405	BTA-47K	
R58	10KΩ	3	149078	BTB-10K	
R59	150Ω	1		BTS-150	
R60	1000Ω	1	149101	BTS-1000	
R61	100KΩ	½	149385	BTS-100K	
R62	2700Ω	1		BTS-2700	
R63	68Ω	1	28144	BTS-68	
R64	47KΩ	1	149405	BTA-47K	
R65	10KΩ	2	149078	BTB-10K	
R66	150Ω	1	149096	BTS-150	
R67	150Ω	1	149096	BTS-150	
R68	100KΩ	½	149385	BTS-100K	
R69	150Ω	½	28148	BTS-150	
R70	47KΩ	1	149405	BTA-47K	

RESISTORS (cont)

ITEM No	RATING OHMS	WATT	Stromberg-Carlson PART No.	IRC PART No.	NOTES
			REPLACEMENT DATA		
R71	10KΩ	½	149078	BTB-10K	
R72	150Ω	1	149133	BTA 150	
R73	3300Ω	½	28164	BTS 3300	
R74	150Ω	½	28148	BTS 150	
R75	12KΩ	1	149467	BTA 12K	
R76	1000Ω	2	149044	BTB-1000	
R77	56Ω	½	149445	BTS 560	
R78	4700Ω	½	28166	BTS 4700	
R79	4700Ω	½	28166	BTS 4700	
R80	330Ω	1	149171	BTA-330	
R81	10KΩ	5	149471	1 3/4A-10K	
R82	7500Ω	5	149446		
R83	22KΩ	½	149381	BTS 22K	
R84	75KΩ	½	28173	BTS-75K	
R85	270Ω	3			
R86	1500Ω 5%	½	149387	BTS-1500 5%	
R87	82KΩ	½	149175	BTA-82K	
R88	1Meg	½	149119	BTS-1Meg	
R89	220Ω	½	28150	BTS-220	
R90	100Ω	2	28146	BTS-100	
R91	47KΩ	2	149080	BTB-47K	
R92	22KΩ	2	149079	BTB-22K	
R93	47KΩ	2	149080	BTB-47K	
R94	47KΩ	2	149080	BTB-47K	
R95	2200Ω	½	28162	BTS-2200	
R96	47KΩ	½	149405	BTA-47K	
R97	47KΩ	½	149111	BTS 47K	
R98	820Ω	½	28157	BTS-820	
R99	120KΩ	½	28181	BTS-120K	
R100	120KΩ	½	28181	BTS 120K	
R101	47KΩ	½	149111	BTS-47K	
R102	6Ω	½	149094	BTS 6S	
R103	47Ω 5%	½	149093	BTS-47 5%	
R104	220Ω	½	149097	BTS-220	
R105	12KΩ	½	149055	BTS-12K	
R106	12KΩ	2	149055	BTB 12K	
R107	15KΩ	½	149103	BTS 15K	
R108	4700Ω	½	149442	BTA-4700	
R109	220Ω	½	149097	BTS 220	
R110	18KΩ	½	28173	BTS 18K	
R111	47KΩ	½	149111	BTS 47K	
R112	10Meg	½	149125	BTS-10Meg	
R113	470KΩ	½	149117	BTS 470K	
R114	470KΩ	½	149117	BTS 470K	
R115	270Ω	½	149094		
R116	6Ω	½	149094	BTS-6S	
R117	3750Ω	10	149488		
R118	100KΩ	½	149112	BTS-100K	
R119	27KΩ	½	28174	BTS-27K	
R120	1Meg	½	28191	BTS-1Meg	
R121	560Ω	½	28167	BTS-5900	
R122	3.9Meg	½	28198	BTS-3.9Meg	
R123	150KΩ	½	149386	BTS-150K	
R124	82Ω	½	28160	BTS-82K	
R125	270KΩ	½	28184	BTS-270K	
R126	2.2Meg	½	149131	BTS-2.2Meg	
R127	820KΩ	½	28190	BTS-820K	
R128	560KΩ	½	28188	BTS-560K	
R129	47KΩ	½	149111	BTS-47K	
R130	47KΩ	½	149111	BTS-47K	
R131	1Meg	½	28191	BTS-1Meg	
R132	56KΩ	3	149082	BTB-56K	
R133	10KΩ	1	149402	BTA-10K	
R134	4700Ω	2	149054	BTB-4700	
R135	100KΩ	½	149113	BTS-100K	
R135A	22KΩ			BTS-22K	
B	8200Ω		e128200	BTS-8200	
C	8200Ω			BTS-8200	
R137	1Meg	½	149119	BTS-1Meg	
R138	560KΩ	½	28189	BTS-560K	
R139	1Meg	½	28191	BTS-1Meg	
R140	4700Ω	½	149105	BTS-4700	
R141	12KΩ	1	28171	BTS-12K	
R142	3.9Meg	½		BTS-3.9Meg	
R143	680Ω	1	149127	BTA-680	
R144	820Ω	1	149042	BTB-820	
R145	220KΩ	½	28183	BTS-220K	
R146	3.3Meg	½	149112	BTS-3.3Meg	
R147	1000Ω	½	149398	BTA 1000	
R148	220KΩ	½	149115	BTS-220K	
R149	1200Ω	1	28158	BTA-1200	
R150	1200Ω	1	28158	BTA-1200	
R151	680KΩ	½	28189	BTS-680K	
R152	820KΩ	½	28190	BTS-820K	
R153	100KΩ	½	149102	BTA-100K	
R154	1Meg	½	28191	BTS-1Meg	
R155	150KΩ	½	149386	BTS-150K	
R156	3900Ω	½	28165	BTS-3900	
R157	68KΩ	½	28179	BTS-68K	
R158	22KΩ	½	149334	BTS-22K	
R159	22KΩ	½	149108	BTS-22K	
R160	100KΩ	½	149385	BTS-100K	
R161	150KΩ	½	149386	BTS-150K	
R162	150KΩ	1	149194	BTA-150K	
R163	68KΩ	½		BTA-68K	
R164	68Ω	½	149094	BTS-68	
R165	470KΩ	½	149117	BTS-470K	
R166	100Ω	2	149034		
R167	100Ω	3	149070		
R168	68Ω	½	149094	BTS-68	
R169	68Ω	½	149094	BTS-68	
R170	68Ω	½	149094	BTS-68	
R171	150KΩ	½	149114	BTS-150K	
R172	15KΩ	2	149056	BTB-15K	
R173	10KΩ	3	149078	BTB-10K	
R174	10KΩ	2	149276	BTB-10K	
R175	2.2Ω	½	149456		
R176	2.7Meg	½	149462	BTA-2.7Meg	
R177	2.7Meg	1	149462	BTA-2.7Meg	

RESISTORS (cont)

ITEM No	RATING OHMS	WATT	Stromberg-Carlson PART No.	IRC PART No.	NOTES
			REPLACEMENT DATA		
R178	2.7Meg	1	149462	BTA-2.7Meg	
R179	2.2Ω	½	149456		
R180	3.9Ω	½	149457		
R181	2.2Ω	½	149458		
R182	55Meg	½	149458		
R183	50Meg	½	149459		
R184	2.2Meg	1		BTA-2.2Meg	
R185	22Meg	1	149460		
R186	470KΩ	½		BTA-470K	
R187	10KΩ	½	28170	BTS-10K	
R188	220Ω	½	28150	BTS-220	
R189	2200Ω	½	28162	BTS-2200	
R190	6200Ω	½	28169	BTS-6200	
R191	10KΩ	½	28170	BTS-10K	
R192	220KΩ	½	149115	BTS-220K	
R193	2.2Meg	½	149121	BTS-2.2Meg	
R194	220KΩ	½	149115	BTS-220K	
R195	4.7Meg	½	28199	BTS-4.7Meg	
R196	100Meg	½	149454		
R197	2.2Meg	½	149121	BTS-2.2Meg	
R198	100KΩ	½	149103	BTS-100K	
R199	270Ω	½	28151	BTS-270	
R200	56KΩ	½	28178	BTS-56K	
R201	2200Ω	½	28162	BTS-2200	
R202	15KΩ	½	28172	BTS-15K	
R203	1000Ω	½	28158	BTS-1000	
R204	330Ω	½		BTS-330	
R205	22KΩ	2		BTB-22K	
R206	2200Ω	½	28162	BTS-2200	
R207	68000Ω	½	149143	BTA-6800	
R208	150KΩ	½	149114	BTS-150K	
R209	18KΩ	2	149057	BTB-18K	
R210	15KΩ	2	149056	BTB-15K	
R211	1800Ω	½	28161	BTS-1800	
R212	2000Ω	½	28159	BTS-2000	
R213	100KΩ	½	149113	BTS-100K	
R214	100Ω	½	28146	BTS-100	
R215	8200Ω	2	149054	BTB-8200	
R216	390Ω	½		BTS-390	
R217	100KΩ	½	149107	BTS-100K	
R218	27KΩ	½	28174	BTS-27K	
R219	8200Ω	½	28169	BTS-8200	
R220	47KΩ	½	28646	BTS-47K	
R221	33KΩ	½	149404	BTA-33K	
R222	56KΩ	½	28178	BTS-56K	
R223	1800Ω	½	28161	BTS 1800	
R224	56Ω	½	28143	BTS-56	
R225	150Ω	½	28148	BTS-150	
R226	8200Ω	2	149054	BTB-8200	
R227	8200Ω	2	149054	BTB-8200	
R228	33Ω 5%	½	149388	BTS-33K 5%	
R229	1500Ω	½	28160	BTS-1500	
R230	220KΩ	½	28183	BTS-220K	
R231	3000Ω 5%	½	149447	BTS-3000 5%	
R232	33KΩ 5%	½	149448	BTS-33K 5%	
R233	3.3Meg	½	149122	BTS-3.3Meg	
R234	56Ω	½	28143	BTS-56	
R235	4700Ω	½	149016	BTS-4700	
R236	3900Ω	2	149050	BTB-3900	
R237	4700Ω	½	149016	BTS-4700	
R238	1Meg	½	28191	BTS-1Meg	
R239	1Meg	½	149119	BTS-1Meg	
R240	1Meg	½	28191	BTS-1.8Meg	
R241	2700Ω	½	28154	BTS-270	
R242	47KΩ	2	149080	BTB-47K	
R243	15K 5%	½	149250	BTS-15K 5%	
R244	10KΩ 5%	½	149259	BTS-10K 5%	
R245	15KΩ 5%	½	149250	BTS-15K 5%	
R246	1Meg	½	149119	BTS-1Meg	
R247	5600Ω 5%	1		BTA-5800 5%	
R248	22KΩ 5%	½	149234	BTS-22K 5%	
R249	47KΩ 5%	½	149238	BTS-47K 5%	
R250	10KΩ 5%	½	149259	BTS-10K 5%	
R251	10KΩ 5%	½	149259	BTS-10K 5%	
R252	680Ω	½		BTS-680	
R253	1.2Meg	½	28192	BTS-1.2Meg	
R254	390Ω 5%	½	149614	BTS-390 5%	
R255	10KΩ 5%	2	149450	BTB-10K 5%	
R256	1.2Meg	½	28192	BTS-1.2Meg	
R257	2700 5%	½	149451	BTS-270 5%	
R258	180Ω 5%	½	149328	BTS-180 5%	
R259	220Ω	½		BTS-220	
R260	2200Ω	2		BTB-2200	
R261	3300Ω 5%	½	149449	BTS-3300 5%	
R262	10KΩ 5%	½	149259	BTS-10K 5%	
R263	10KΩ 5%	½	149259	BTS-10K 5%	
R264	150KΩ 5%	½	149259	BTS-10K 5%	
R265	680Ω	½	149100	BTS-680	
R266	1.2Meg	½	28192	BTS-1.2Meg	
R267	390Ω 5%	½	149614	BTS-390 5%	
R268	10KΩ 5%	2	149450	BTB-10K 5%	
R269	1.2Meg	½	28192	BTS-1.2Meg	
R270	270Ω 5%	½	149451	BTS-270 5%	
R271	180Ω 5%	½	149328	BTS-180 5%	
R272	2200Ω	2		BTB-2200	
R273	2200Ω	2		BTB-2200	
R274	3300Ω 5%	½	149449	BTS-3300 5%	
R275	10KΩ 5%	½	149259	BTS-10K 5%	
R276	30KΩ 5%	½	149465	BTS-30K 5%	
R277	10KΩ 5%	½	149259	BTS-10K	
R278	1.2Meg	½		BTS-1.2Meg	
R279	3900 5%	½	149614	BTS-390 5%	
R280	10KΩ 5%	2	149450	BTB-10K 5%	
R281	1.2Meg	½	28192	BTS-1.2Meg	
R282	2700 5%	½	149451	BTS-270 5%	
R283	1800 5%	½	149328	BTS-180 5%	
R284	47000 5%	2	149452	BTB-47K 5%	
R285	820	½	28145	BTS-820	
R286	33000 5%	½	149449	BTS-3300 5%	

• Items R136A, R136B, R136C, C104A, C104B and C104C are combined in one unit.

TRANSFORMER (POWER)

ITEM No	RATING PRI.	SEC. 1	SEC. 2	Stromberg-Carlson PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
					REPLACEMENT DATA					
T1	117VAC	734VCT	5VAC	161448	P-8340 ①	P-3053 ① ② ③ ④				
	② 2.5A	292ADC	③ 6A							
	SEC. 3	SEC. 4	SEC. 5							
	6.3VAC	④ 3VAC								
	③ 9A	④ 9A								

① Use 8V secondary taps for sec. #2.
② Parallel and phase 5.3V 3A windings for Sec. #3.
③ Parallel and phase 6.3V 7A windings for Sec. #4.
④ Taps 5.3V 2.7A winding.
⑤ Drill new mounting holes.
⑥ Taps extra 6.3V winding.

TRANSFORMER (POWER)

ITEM No	RATING PRI.	SEC. 1	SEC. 3	Stromberg-Carlson PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
					REPLACEMENT DATA					
T2	117VAC	592VCT	5VAC	161444		P-3055 ①				26R00 ②
	② 2.26A	230ADC	③ 6A							
	SEC. 2	SEC. 4	SEC. 5							
	6.3VAC	③ 2A								

① Tape 6.3V 4.5A winding.
② Parallel and phase 3-6.3V 3A windings for Sec. #3. Tape extra 5V winding.

TRANSFORMER (FILAMENT)

ITEM No	RATING PRI.	SEC. 1	SEC. 2	Stromberg-Carlson PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
					REPLACEMENT DATA					
T3	117VAC	6.3VAC		161435	P-8468 ① ②	P-2946 ②	P-16X ②		FS513 ① ②	31P10 ① ②
	① .14A	① 1.72A								

① Drill one new mounting hole.
② Tape 6.3VCT, use original shield.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	Stromberg-Carlson PART No.	Halldorson PART No.	Merit PART No.	RCA TYPE No.	Ram PART No.	Stancor TYPE No.	Thordarson PART No.	Triad PART No.
		REPLACEMENT DATA							
T4	Vert. Osc. Trans.	161254	B6702	A-3003	209T1 ①	V405	A-8125	24A87 ①	A-27X
T5	Horiz. Output Trans.	161275			245T1				
T6	Vert. Output Trans.	161278	21802	A-3038	243T1 ①	V307	A-8144	28R53	Z-99X
T7A	Yoke-Horiz. (12MH)	114761			223DI				
B	Vert. (110MH)								
T8	Horiz. Linearity-(2-.95MH) ②	114137							
T9	Width - (55-75MH)	114138		MWC-3 ①	218HI			WC-19 ①	
T10	Field Neut. Coil -	114140							
					27-5MH				
T11	Horiz. Dynamic Convergence Phase Coil (5.5-32MH)	114139	RF800 ① ③	MWC-1 ② ④	216RI	201R3A	WC-5 ① ③	WC-13 ③ ⑤	WC-11 ③ ④
T12	Horiz. Dynamic Convergence Output Trans.	161276			242TI				
T13	Vert. Dynamic Convergence Output Trans.	161277			241TI				

① Drill new mounting hole(s).
② Two windings, Bifilar.
③ Enlarge mounting hole.
④ Connect to coded blue and red terminals.
⑤ Connect to coded terminals #1 and #2
⑥ Connect to coded terminals #3 and #4.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI.	SEC.	Stromberg-Carlson PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
				REPLACEMENT DATA					
T14	4.8KΩ	3.1Ω	161285	A-3823	A-2930	B-5Z	Z-100X	26S49	

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Stromberg-Carlson PART No.	JENSEN PART No.	QUAM PART No.	
SP1	8"	PM	3.1Ω	155785	ST-115 Mod. P8-V	8A21	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Stromberg-Carlson PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	0Ω CT	0Ω					
L2	Neut. Coil	0Ω						
L3	RF, Mixer Grid & Osc. Coils	0Ω						
L4	Fil. Choke	0Ω						
L5	Conv. Plate	.1Ω						
L6	1st. Video IF Grid	.1Ω	.3Ω	114428				Includes 2-150MMF, 1-56MMF Caps, 2 traps
L7	Fil. Choke	.22Ω		114729	19-1001	TV-189	6175	.47 Microhenries, IRC part no. CLA
L8	1st. Video IF Plate	0Ω		114429				Includes 12KΩ resistor, 1.8MMF, 100MMF caps., 39.75MC traps
L9	2nd. Video IF Grid	.1Ω		114430				Includes resistor, cap & 47.25MC trap
L10	RF Choke	1.4Ω		114762	19-1003		4608	4 Microhenries
L11	Fil. Choke	.22Ω		114729	19-1001	TV-189	6175	.47 Microhenry IRC part no. CLA
L12	3rd. Video IF	.1Ω	.1Ω	114431				Includes trap
L13	Fil. Choke	.22Ω		114729	19-1001	TV-189	6175	.47 Microhenry IRC part no. CLA
L14	4th. Video IF	.1Ω	.1Ω	114432	17-4522		6219	
L15	Fil. Choke	.22Ω		114729	19-1001	TV-189	6175	.47 Microhenry IRC part no. CLA
L16	5th. Video IF	0Ω	0Ω	114433	17-452 ∃		6219	
L17	6th. Video IF	0Ω		114434	17-4504		6218 *	Includes 47.25MC trap
L18	Shunt Peaking Coil	6Ω		114763	19-3250	TV-185	6181	250 Microhenries
L19	4.5MC Trap	.2Ω		114437				Tapped ⓐ .1Ω
L20	3.58MC Trap	3Ω		114444		TV-151		
L21	3.58MC Take-off Coil	3Ω		114445		TV-151 ▲		
L22	Series Peaking Coil	4.8Ω		114764	19-3125		6153	120 Microhenries
L23	Series Peaking Coil	7Ω		114763	19-3250	TV-185	6181	250 Microhenries, wound on 22KΩ resistor
L24	2nd. Sound	1.8Ω	1.9Ω	114401	16-3445 ▲	TV-113	6203	
L25	Ratio Det.	6.3Ω	1.7ΩCT	114375	17-3497	TV-115	6205	Tertiary winding - .4Ω
L26	Horiz. Osc.	80Ω		161274	20-1402 ♦	TV-162 ♦	6183 ♦	Waveform winding -48Ω
L27	Bandpass Primary Coil	8.5Ω ■	4.2Ω	114442				
L28	Bandpass secondary Coil	1.6Ω		114446	20-1004	TV-151	1469	
L29	RF Choke	1.8Ω		114673	19-1002		4606	2.2 Microhenries, IRC part no. CLA
L30	RF Choke	1.8Ω		114673	19-1002		4606	2.2 Microhenries, IRC part no. CLA
L31	Cathode Choke	1.8Ω		114693	19-1002		4606	2.2 Microhenries, IRC part no. CLA
L32	Burst Amp. Trans.	4Ω	1.5Ω	114438				
L33	Color Phase Amp. Plate Trans.	.4Ω	7Ω	114439				
L34	Series Peaking Coil	1.7Ω		114449	19-6022		6152	20 Microhenries
L35	Reactance Coil	5.5Ω		114443				
L36	3.58MC Output Trans.	.8Ω	.8Ω	114440				
L37	Quadrature Trans.	1.1Ω	.4Ω	114441				
L38	3.58MC Trap	5.5Ω		114447			1470	
L39	"Q" Demodulator Filter	62Ω		114450	19-1004		4670	6.7 Millihenries
L40	Shunt Peaking Coil	25Ω		114451		BC-549	4664	1.9 Millihenries
L41	Delay Filter	42Ω		114448				Tapped ⓐ 21Ω
L42	Series Peaking Coil	19Ω		114452			4662	1 Millihenry
L43	Series Peaking Coil	19Ω		114452			4662	1 Millihenry
L44	Shunt Peaking Coil	7.5Ω		114765	19-3250	TV-185	6173	250 Microhenries
L45	Series Peaking Coil	6Ω		114766	19-3125	TV-184	6153	180 Microhenries
L46	Shunt Peaking Coil	7.5Ω		114765	19-3250	TV-185	6173	250 Microhenries
L47	Series Peaking Coil	6Ω		114766	19-3125	TV-184	6153	180 Microhenries
L48	Shunt Peaking Coil	7.5Ω		114765	19-3250	TV-185	6173	250 Microhenries

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Stromberg-Carlson PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L49	Series Peaking Coil	6Ω		114766	19-3125	TV-184	6153	180 Microhenries

■ Tapped @ 2.8Ω.
* Use one winding only.
▲ Cut out 7/8" Sq. chassis hole and drill mounting holes.
♦ Add 8200Ω externally.
▲ Parallel with 10KΩ resistor.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	Stromberg-Carlson PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L50	.330ADC	67Ω	3.5HY	161025					
L51	.292ADC	67Ω	3.5HY	161025					

FUSES

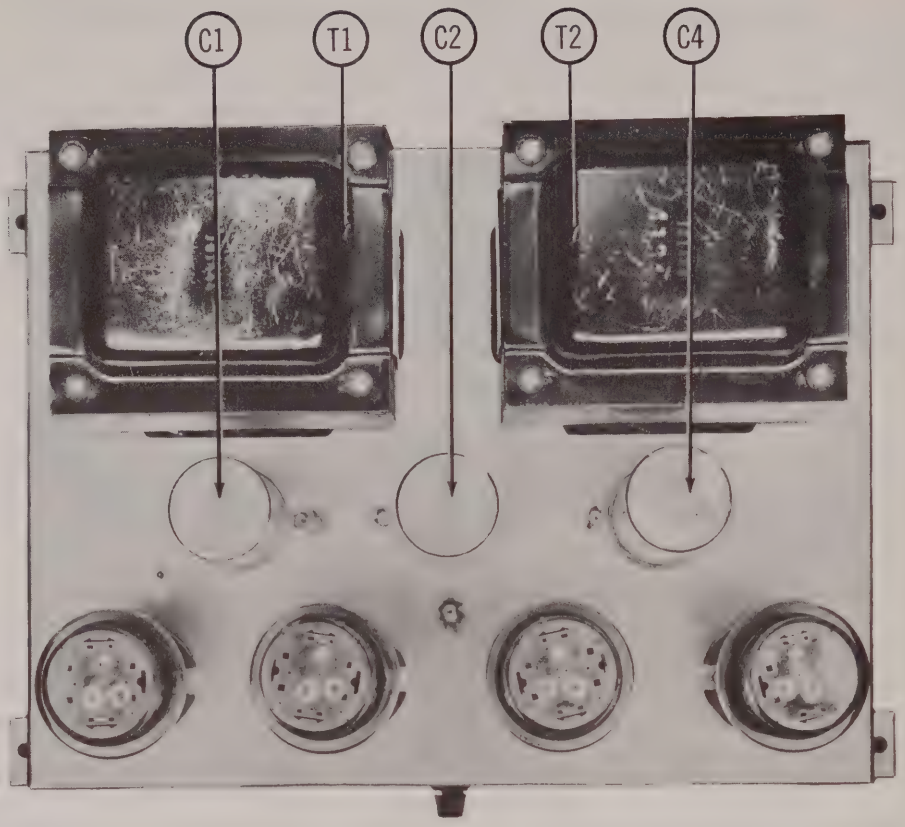
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Stromberg-Carlson PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG S/B	10A 32V	128011		313010 (10A-3AG-S/B)		MDL10	
M2	3AG S/B	3/8A 125V	128012		313.375 (3/8A-3AG-S/B)		MDL3/8	

CRYSTAL DIODES

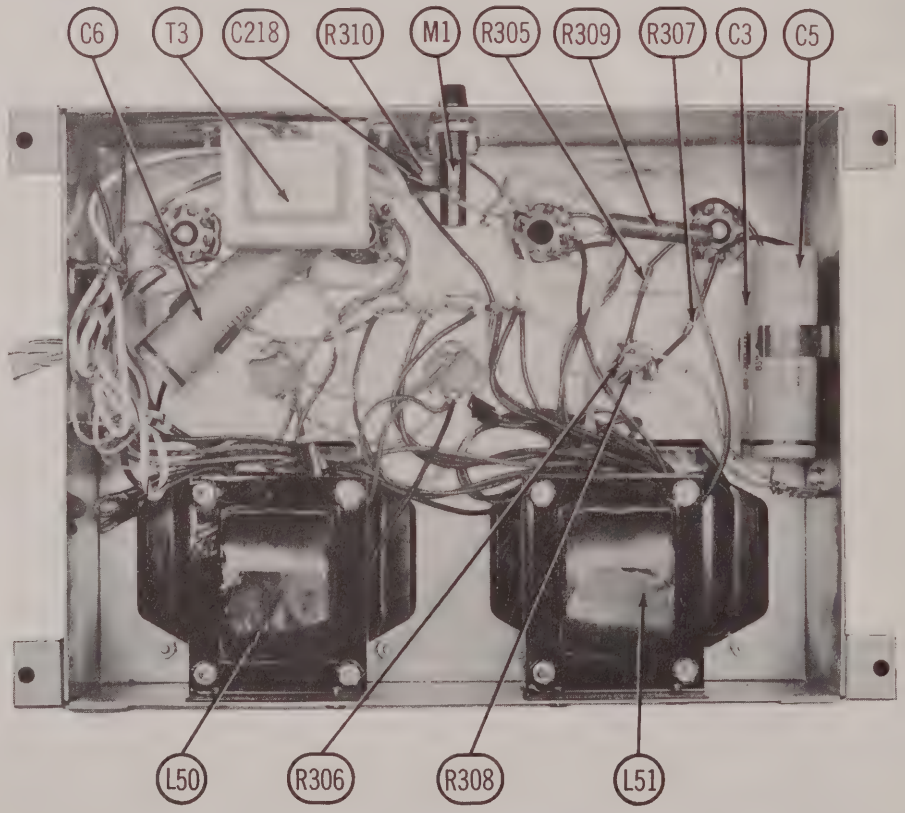
ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Stromberg-Carlson PART No.	FEDERAL PART No.	SYLVANIA PART No.	
M3	1N60		1N64A	1N60 or 1N132	Video Det.
M4	1N60		1N64A	1N60 or 1N132	Sound Det.

MISCELLANEOUS

ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M5	Tuner		VHF
M6	Trap		VHF Ant. Input
M7	Video Det. Assy.	114435	Includes coils, capacitors & M3
M8	Sound Det. Assy.	114436	Includes 470KΩ resistor, 15MMF cap., coil and M4
M9	3.58MC Crystal	162201	
M10	Delay Line	114767	
M11	Purity Magnet		
M12	Beam Positioning Magnets		
	Trimmer Cap.	110056	Horiz. Lock (30-270MMF)



POWER SUPPLY CHASSIS-TOP VIEW



POWER SUPPLY CHASSIS-BOTTOM VIEW

MISCELLANEOUS ADJUSTMENTS (cont.)

DC CONVERGENCE ADJUSTMENTS

Connect the RF output of a white dot generator across the antenna terminals.

Turn the horizontal dynamic convergence control fully counter clockwise. Turn the vertical dynamic convergence control, the vertical shaping control and the DC convergence control to their mid-range positions. Position the convergence magnets until the red, blue and green dots of a dot triad near the center of the screen are super-imposed on each other forming a single white dot. Frequent readjustment of the DC focus and DC convergence controls may be necessary while positioning the convergence magnets due to interaction. Final positioning of the convergence magnets should not leave them too close to the neck of the picture tube or beam focus distortion may result.

DYNAMIC CONVERGENCE ADJUSTMENTS

Leave the white dot generator connected as under "DC Convergence Adjustments".

During adjustment of dynamic convergence, it may be helpful to frequently vary the DC convergence control to obtain best convergence on various parts of the screen.

Adjust the vertical convergence amplitude control so that the dots along a vertical center line show equal dot displacement from top to bottom of center line. If necessary, readjust focus control. If equal dot displacement does not occur on the vertical center line adjust the vertical convergence shape control to obtain the most uniform dot displacement. If necessary, readjust the vertical convergence amplitude control. Readjust the DC convergence control so that the dots converge to form white dots along the vertical lines near the center of the picture. Adjust the focus control to keep dots in focus. Slight readjustment of the vertical amplitude and vertical shape controls may be required to obtain best vertical convergence.

Adjust the horizontal dynamic convergence amplitude control until the dots along a horizontal line near the center of the picture show an equal displacement from left to right. Readjust the DC convergence control until the dots along this line converge to form a single line of white dots. Slight readjustment of A34 and A35 may be necessary to obtain optimum horizontal convergence. Readjust the focus and DC convergence as necessary to obtain best picture.

WHITE ADJUSTMENT

Disconnect generator from antenna.

Turn the brightness control to maximum.

Turn the chroma and contrast controls to minimum.

Adjust the red, blue and green screen controls to obtain a low brightness white, (grey).

Turn the contrast control to mid-position.

Tune in a black and white picture.

Adjust the blue and green gain controls until the high brightness high-lights in the picture are white.

Turn the brightness control down to a reduced setting.

Adjust the blue and green brightness controls until the low brightness portions of the picture are white.

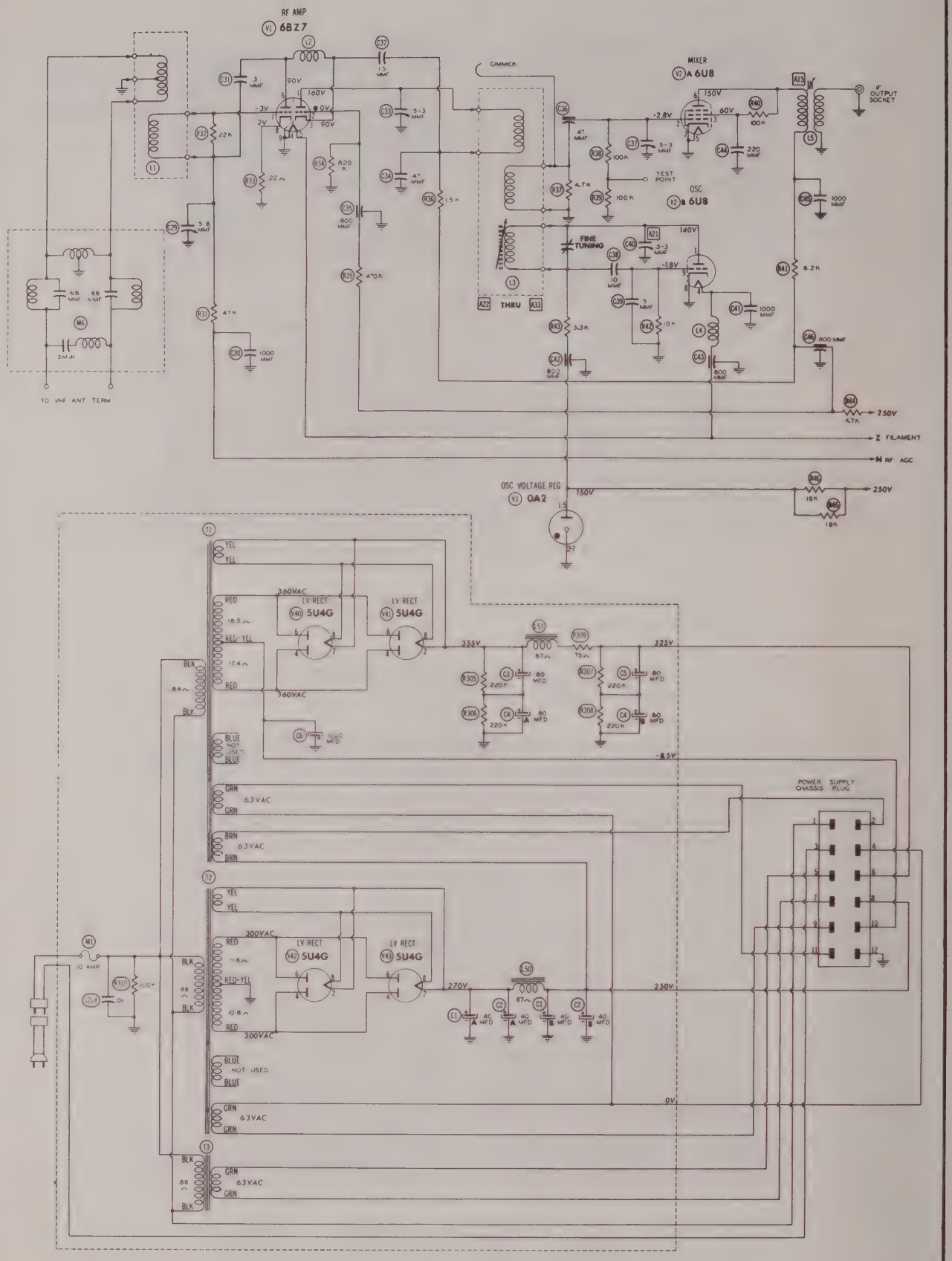
The entire procedure should be repeated until the picture remains black and white over all settings of the contrast and brightness controls.

COLOR KILLER ADJUSTMENT

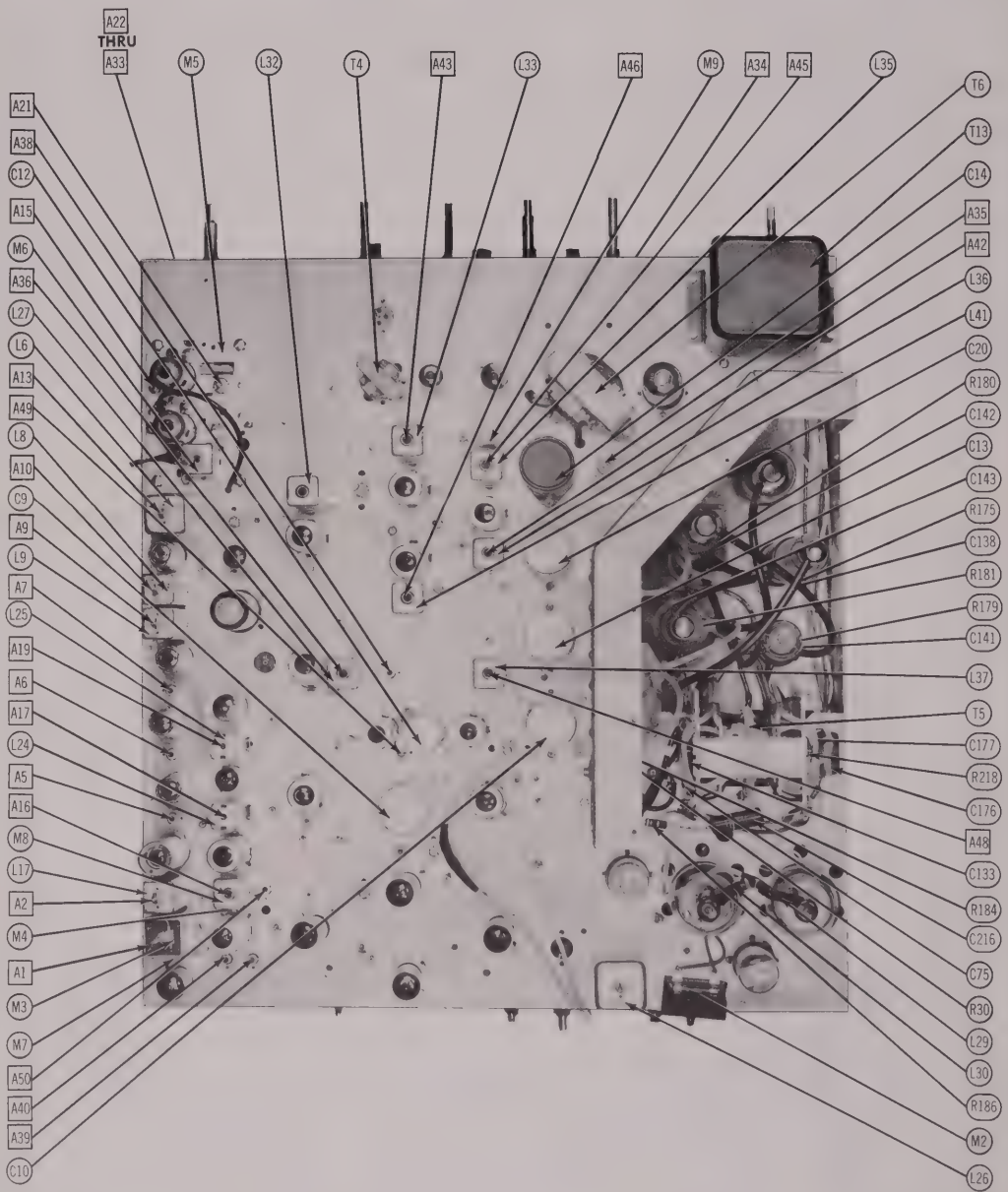
Set the color killer control to maximum clockwise position.

Tune in a color program, (if no color program is available a color bar generator may be used).

Adjust the control counter clockwise to the point where color just appears.



TUNER AND POWER SUPPLY SCHEMATIC



CHASSIS TOP VIEW

TRAVLER
MODELS 9051, 9052, 9060, 9061

PROPERTY OF
L. F. DLA[illegible]
3924 M[illegible]
DENVER, COLO[illegible]

TRAVLER
MODELS 9051, 9052, 9060, 9061

TRAVLER
MODELS 9051, 9052, 9060, 9061

TRADE NAME	Travler Models 9051, 9052, 9060, 9061
MANUFACTURER	Travler Radio & Tel. Corp., 571 W. Jackson Blvd., Chicago, Ill.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Automatic Record Changer
TUBES (Four)	Types 6C4 Pre-Amp., 12AX7 AF Amp.-Phase Inverter, (2) 50L6GT Output
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .24 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT - SEE V-M MODEL 950, PHOTOFACT SET #216 FOLDER 16 OR RECORD CHANGER MANUAL CM-5..

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TRAVLER MODEL 9051

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: TRAVLER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Pre-Amplifier	6C4	6C4	6BG	
V2	AF Amplifier - Phase Inverter	12AX7	12AX7	9A	
V3	Output	50L6GT	50L6GT	7S	
V4	Output	50L6GT	50L6GT	7S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAVLER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	150	EC-29	AFH3-10		C009		FP410	TVL-4425	
B	■40	150								
C	▲40	150								
C2	.05	200		B288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C4	220			SI220	D6-221		GP2L-221	UC-5322	5GA-T22	
C5	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C6	3900									
C7	1000									
C8	4700									
C9	3300									
C10	.02	200		P288-02	DF-203	PJ2S2		PT412	2TM-S2	
C11	.01	200		P288-01	D6-103	PJ2S1	GP2-333-103	PT411	2TM-S1	
C12	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C13	.1	200		P288-1	DF-104	PJ2P1		PT401	2TM-P1	
C14	.005	600		P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C15	.05	200		P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C16	.1	600		P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C17	2.0	50								

CONTROLS

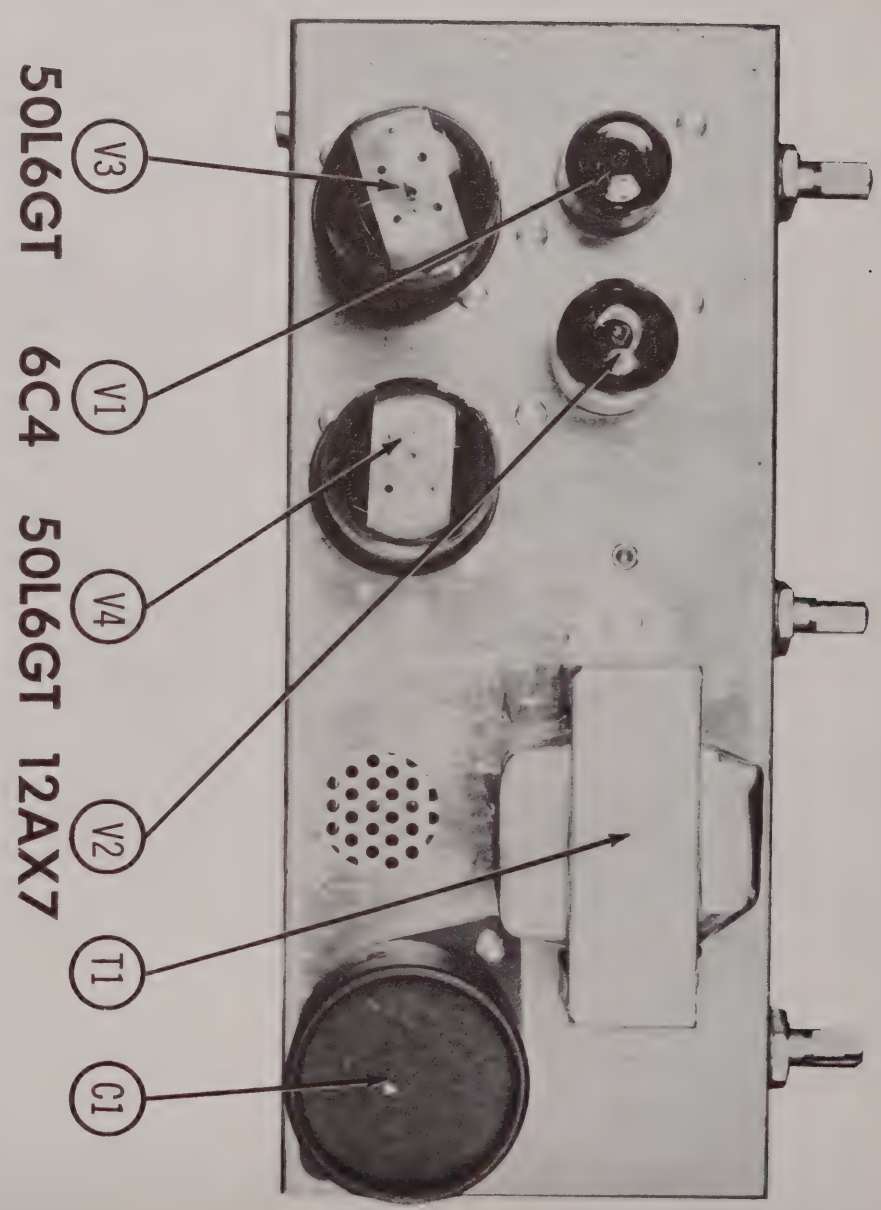
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAVLER PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	VC-44	Q11-137	A47-1Meg-S	AB-69	U-54	Bass
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	KB-1	US-26	Attach to R1A
R2A	1Meg	½	VC-45	Q11-137	A47-1Meg-S	AB-69	U-54	Treble
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	1Meg	½	VC-46	Q13-137	A47-1Meg-Z	BSK-70	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R3A

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRAVLER PART No.	IRC PART No.	NOTES
R4	470KΩ	½		BTS-470K	
R5	1500Ω	½		BTS-1500	
R6	150KΩ	½		BTS-150K	
R7	220KΩ	½		BTS-220K	
R8	18KΩ	½		BTS-18K	
R9	470KΩ	½		BTS-470K	
R10	4700Ω	½		BTS-4700	
R11	220KΩ	½		BTS-220K	
R12	10KΩ	½		BTS-10K	
R13	56KΩ	½		BTS-56K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: TRAVLER PART No.	IRC PART No.	NOTES
R14	220KΩ	½		BTS-220K	
R15	15KΩ	½		BTS-15K	
R16	470KΩ	½		BTS-470K	
R17	220Ω	1		BTA-220	
R18	6800Ω	1		BTA-6800	
R19	470KΩ	½		BTS-470K	
R20	68KΩ	½		BTS-68K	
R21	270Ω	1		BTA-270	
R22	22Ω	1			
R23	22Ω	1			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TRAVLER PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	5.6KΩ CT	3Ω	AT-12	A-3830	A-2935	S-55X	Z1011		

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	TRAVLER PART No.	VIKING PART No.	QUAM PART No.	
SP1	6"	PM	3.3Ω	SPK-27	6J4	6A1	
SP2	6"	PM	3.3Ω	SPK-27	6J4	6A1	
SP3	3½"	PM	3.5Ω	SPK-28	35J4	3A07	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	TRAVLER PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	
M1	.050A	SR-4	1101A	RS75	6S100	100A	5M1	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	TRAVLER PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2						47	0-1 or S-1 & 0-3	

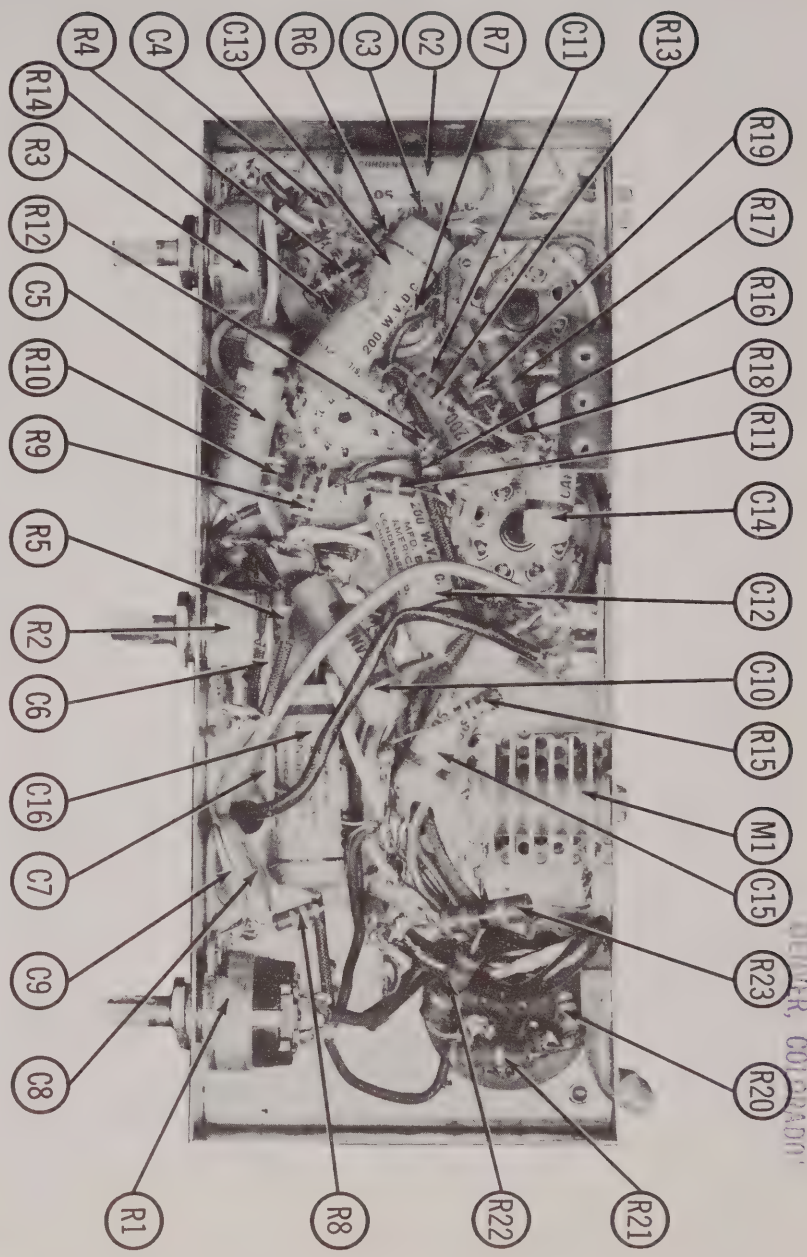
ELECTRO-VOICE NEEDLE LISTING SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA				REMARKS
	TRAVLER PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M3		†S-66 or ♦†S-66SD	†AC-434 or ♦†AC-434D1 or †♦AC-434D2 or ♦AC-434D	†W-75TPS or ♦TW-75DS or ♦W-75TPD	† Jewel ♦ Diamond

CHASSIS—BOTTOM VIEW



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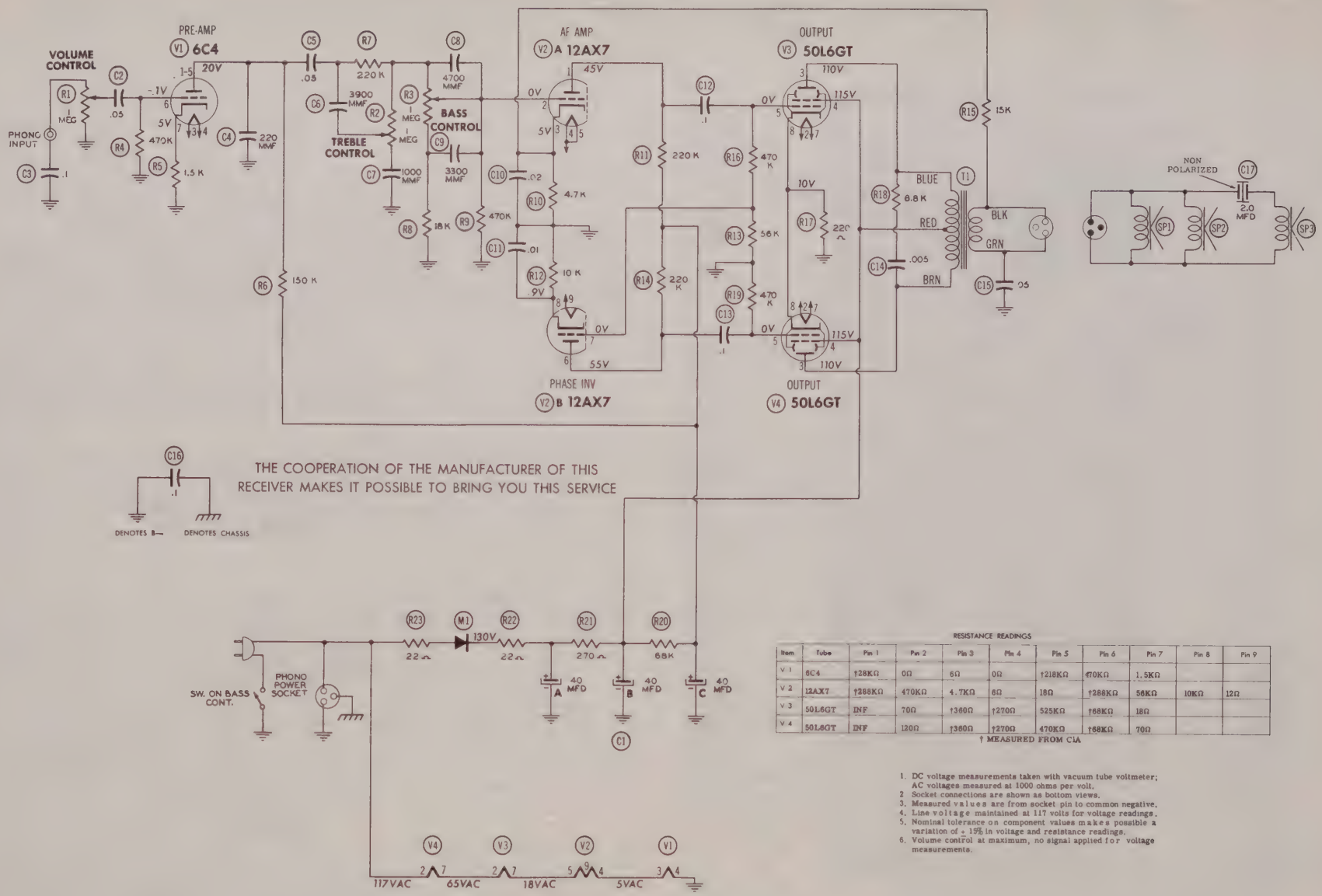
TRAVLER MODEL 9051



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6C4	†28KΩ	0Ω	6Ω	0Ω	†218KΩ	470KΩ	1.5KΩ		
V 2	12AX7	†288KΩ	470KΩ	4.7KΩ	6Ω	18Ω	†288KΩ	56KΩ	10KΩ	12Ω
V 3	50L6GT	INF	70Ω	†360Ω	†270Ω	525KΩ	†68KΩ	18Ω		
V 4	50L6GT	INF	120Ω	†360Ω	†270Ω	470KΩ	†68KΩ	70Ω		

† MEASURED FROM C1A

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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*TRADE MARK

TRUETONE MODELS 2D2423A, 2D2424A, B, 2D2425A, 2D2426A

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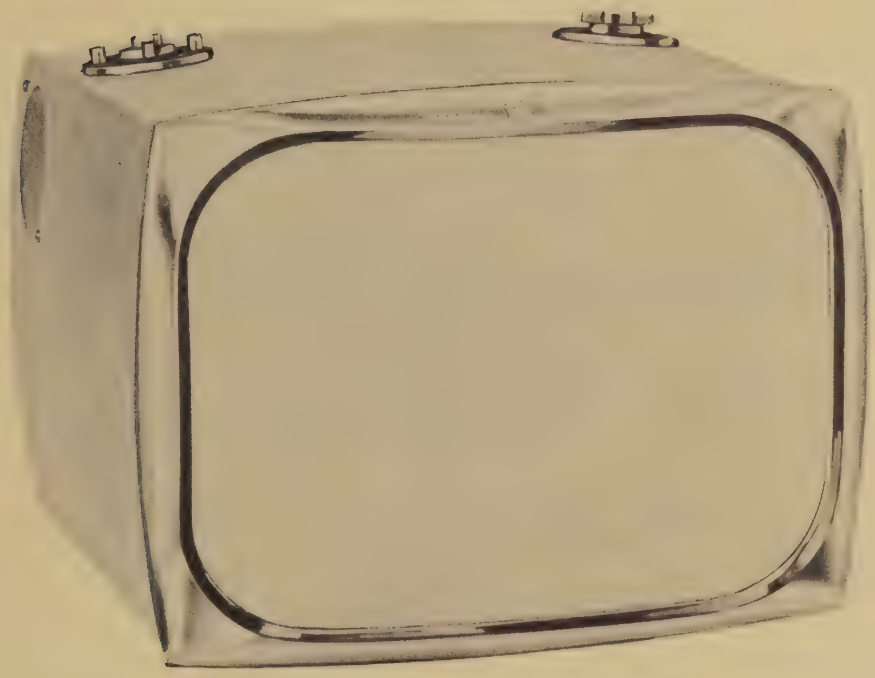

MODEL 2D2424A

TRUETONE MODELS 2D2423A, 2D2424A, B, 2D2425A, 2D2426A

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DATE 2–55 SET 265 FOLDER 15

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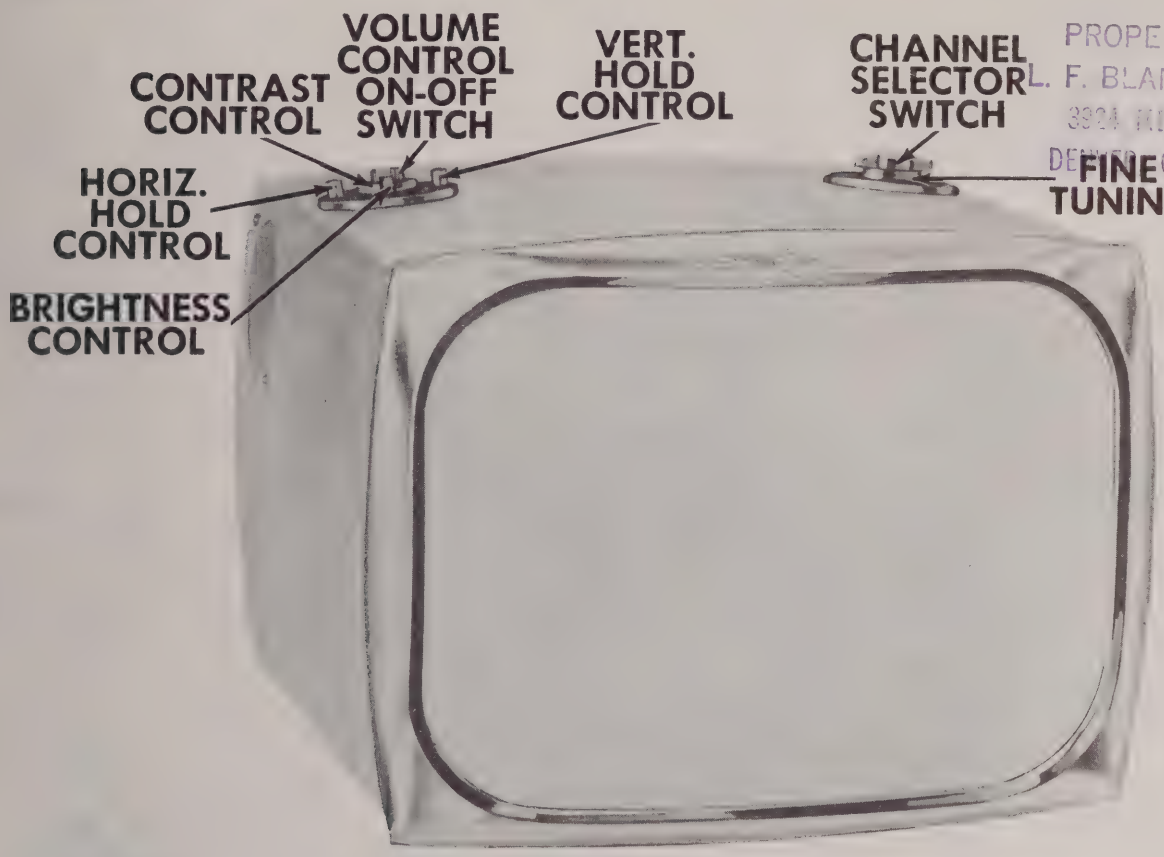

Truetone Model 2D2424A

TRADE NAME	Truetone Models 2D2423A, 2D2424A, 2D2424B, 2D2425A, 2D2426A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Television Receiver
TUBES	Fifteen
POWER SUPPLY	105-115 Volts AC - 60 Cycle RATING 1.38 Amp. @ 115 Volts AC
TUNING RANGE—	Channels 2 thru 13, Video IF 26.75MC, Sound IF 22.25MC (Intercarrier)

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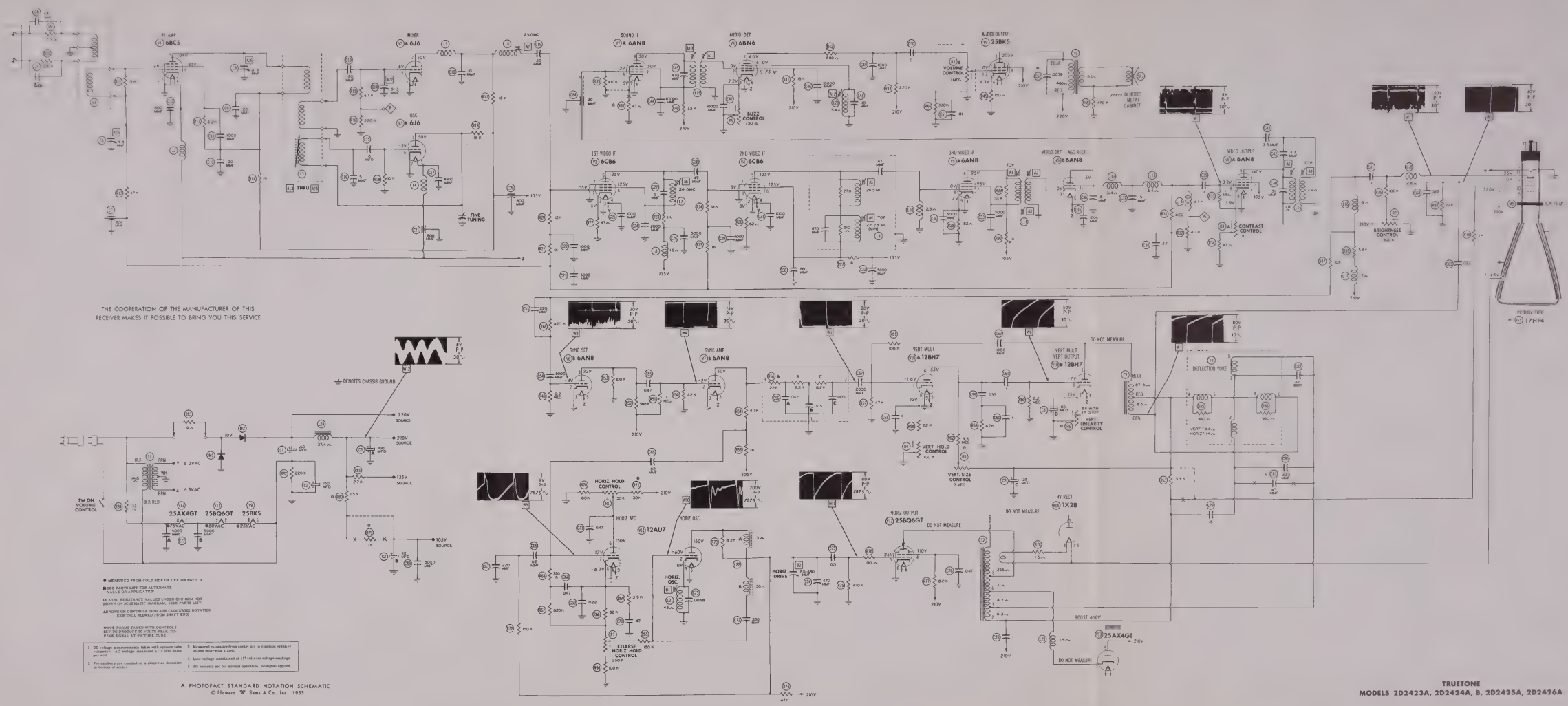
DATE 2-55 SET 265 FOLDER 15

TRUETONE MODELS 2D2423A, 2D2424A, B, 2D2425A, 2D2426A



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

● MEASURED FROM COLD SIDE OF OFF ON SWITCH

● SEE PARTS LIST FOR ALTERNATE VALUES OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM. SEE PARTS LIST.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE

1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1 000 ohms per volt.
2. Pin numbers are counted in a clockwise direction as bottom of socket.
3. Measured values are from socket pin to common negative source unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.

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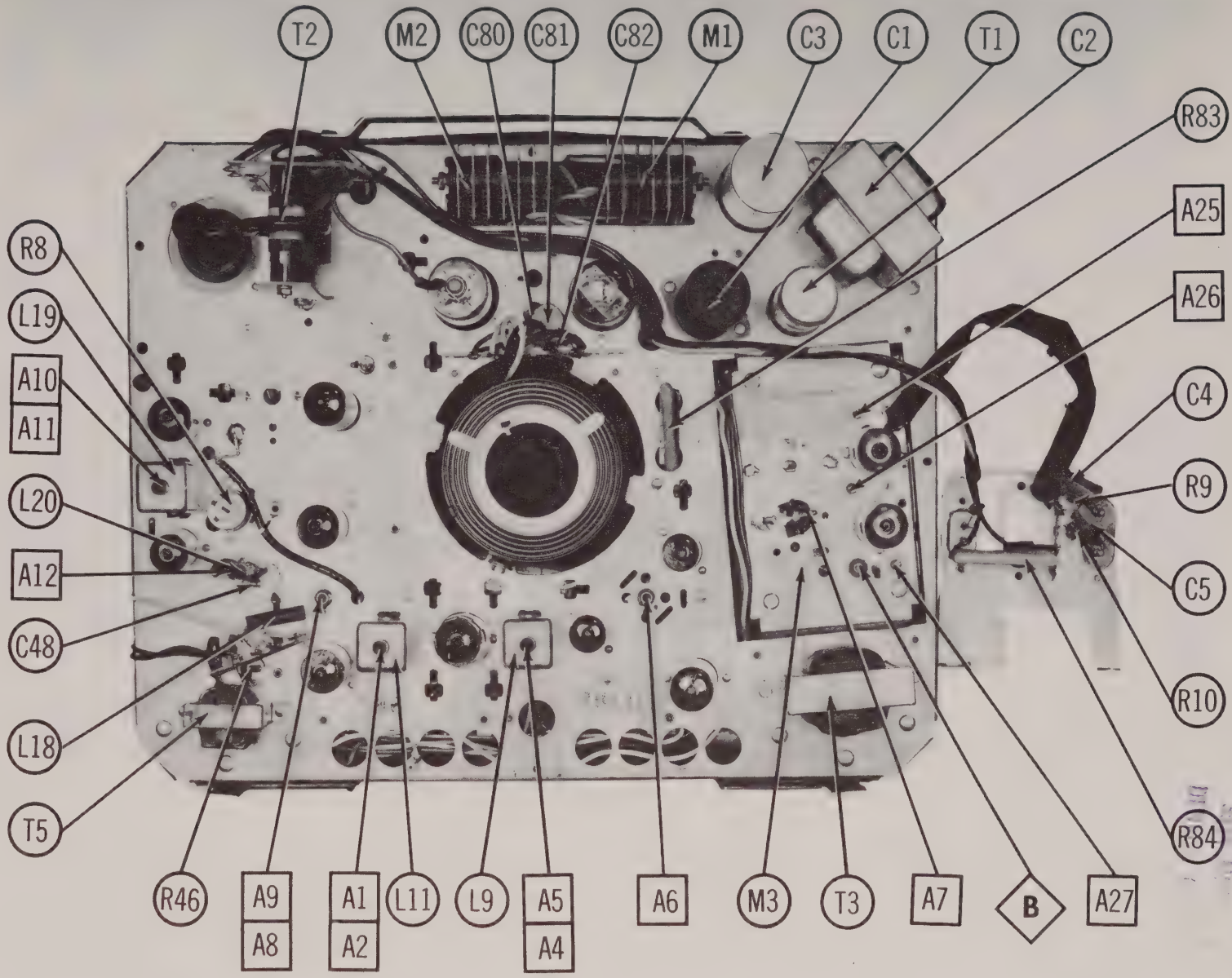
TRUETONE
MODELS 2D2423A, 2D2424A, B, 2D2425A, 2D2426A



CHASSIS TOP VIEW

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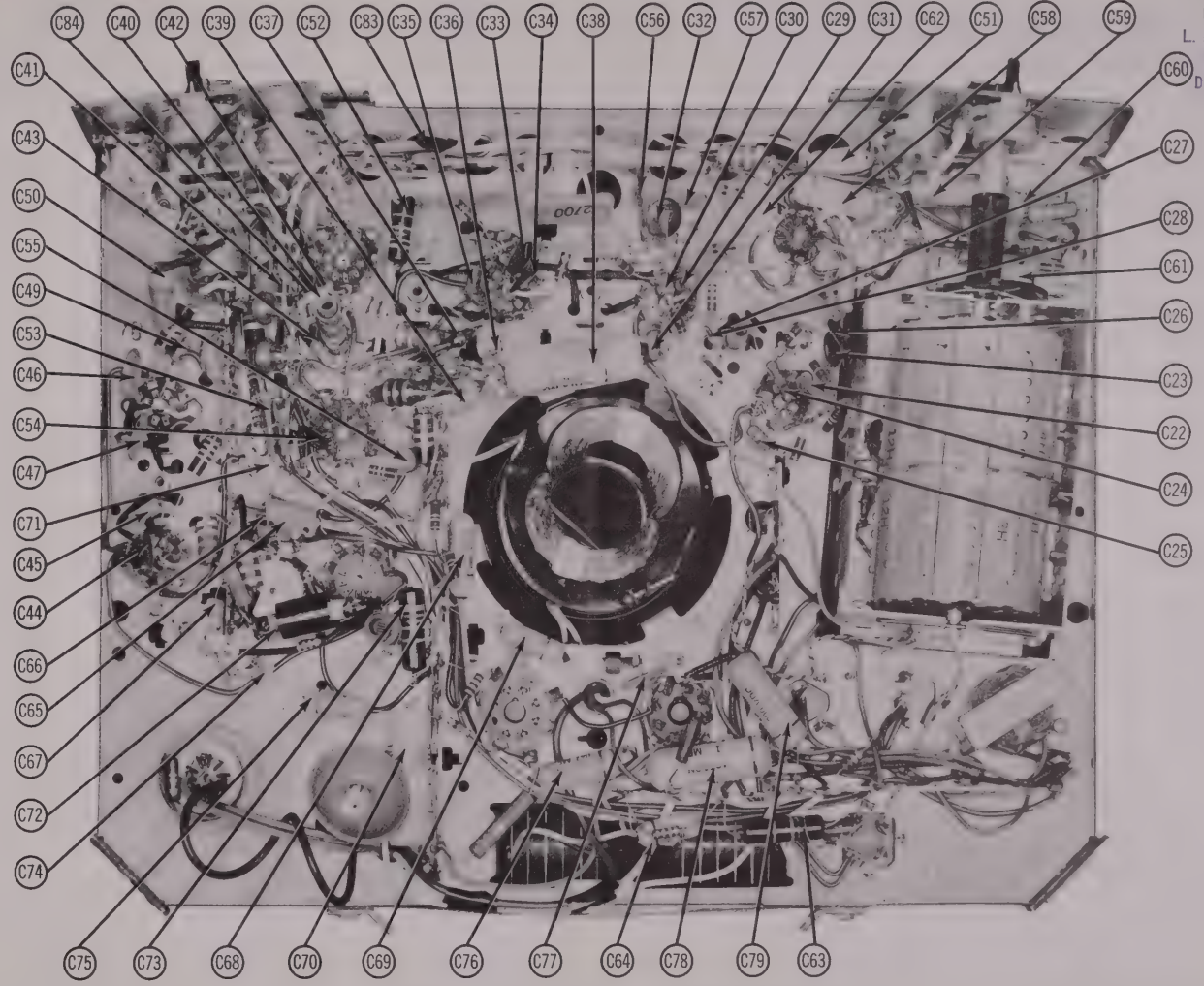

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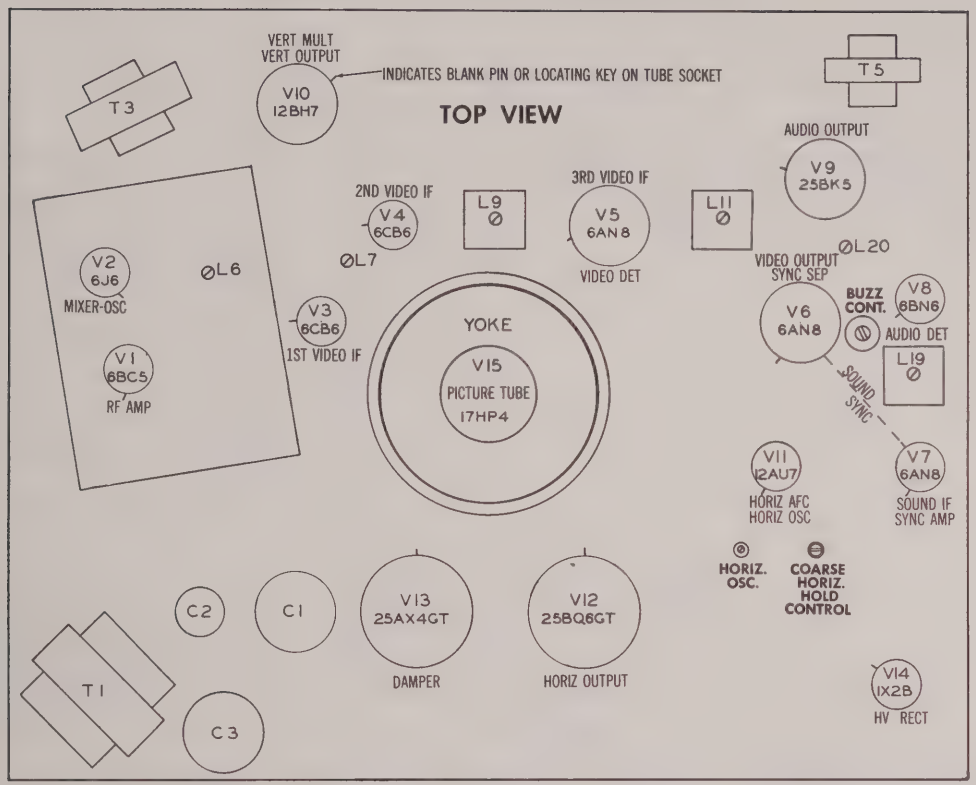
CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

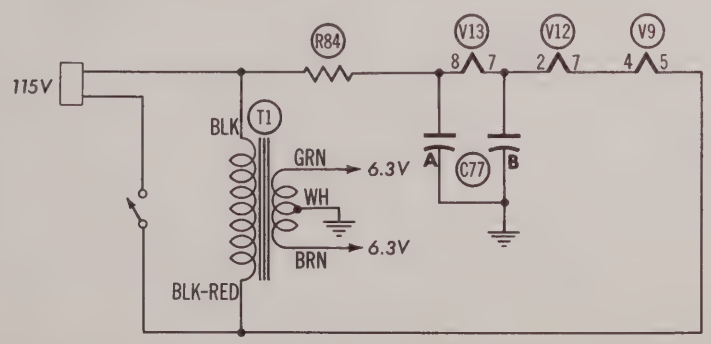
POWER SUPPLY FAILURE
No raster, no sound - **Selenium Rectifiers (M1 & M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V2, V3, V4, V5, V6**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V15**
Has pic, no sound - **V7, V8, V9**

SYNC FAILURE
No vert. sync - **V7, V10**
No horiz. sync - **V7, V11**
No vert. or horiz. sync - **V6, V7**

SWEEP FAILURE
No raster, has sound - **V11, V12, V13, V14, V15**
No vertical deflection - **V10**
Poor vert. linearity or foldover - **V10**
Poor horiz. linearity or foldover - **V11, V12, V13**
Narrow picture - **V11, V12, V13, V14, M1, M2**
Vert. off freq. - **V7, V10**
Horiz. off freq. - **V7, V11**

NOTE: Since this receiver employs tubes used in series-parallel filament network, an open filament in any tube in series may cause the set to be inoperative. (See circuit below).



ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube (V11) to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect a .001MFD capacitor across the vertical input terminals of oscilloscope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 8 (grid) of 6AN8 (V5). Low side to chassis.	25MC (10MC Swp)	23.9MC 26.3MC	Any	Vert. amp. thru 10KΩ to point (A). Low side to chassis.	A1 A2 A3	Connect a short jumper from pin 5 (plate) to pin 6 (screen) of 6CB6 (V4). Adjust for response similar to Fig. 1 with markers at 90%. A3 is a coupling rod and affects band width. Remove short from pin 5 to pin 6 of V4.
2.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	Not used	22.25MC (Unmod.)	"	Use VTVM DC probe to point (A). Common to chassis.	A4	Adjust for minimum deflection.
3.	"	"	"	26.5MC	"	"	A5	Adjust for maximum deflection. Attenuate generator output to maintain not more than 2 volts at VTVM. Repeat step 2.
4.	"	"	"	24.0MC	"	"	A6	Adjust for maximum deflection. Attenuate generator output to maintain not more than 2 volts at VTVM.
5.	"	"	"	25.0MC	"	"	A7	"
6.	"	"	25MC (10MC Swp)	21.3MC 23.8MC 26.65MC	"	Vert. amp. thru 10KΩ to point (A). Low side to chassis.		Check for response curve similar to Fig. 2. Rock A7 for flat response. Increase sweep generator output and use high scope gain to view 22.25MC trap region. Adjust A4 so that 21.3MC occurs at peak of pop-up portion preceeding trap notch. 22.25MC should fall in trap notch. If response obtain is not similar to Fig. 2, repeat steps 1 thru 6.

SOUND IF ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Tune in a TV signal and adjust the fine tuning control until sound bars just appear in the picture. Adjust A8 fully counter clockwise, then clockwise until the horizontal scanning lines are smooth and continuous. Readjust the fine tuning control for clearest picture and best sound.
Insert an attenuator in series with the antenna and the receiver antenna terminals so that the signal strength may be varied from weak to strong. If a suitable attenuator is not available stray feed the signal to the receiver by placing the antenna lead-in near the antenna terminals.
Reduce the signal input to the receiver so that the signal falls below the limiting level of the 6BN6 limiter-detector as evidenced by a "hiss" in the sound. Adjust the secondary of the sound take-off transformer (A9), the sound IF transformer (A10 and A11), the quadrature coil (A12) and the buzz control (R8) for maximum sound and minimum buzz. If hiss disappears while adjusting increase attenuation until hiss reappears.

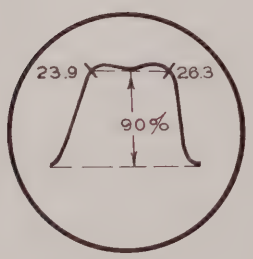


FIG. 1

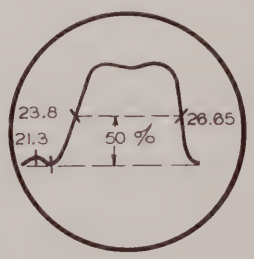


FIG. 2

ALIGNMENT INSTRUCTIONS (cont)

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OSCILLATOR ALIGNMENT

The channel oscillator adjustment screws are reached thru a hole just to the left of the fine tuning shaft. The correct oscillator adjustment screw is accessible thru this hole as the channel switch is turned to each channel. Connect the negative lead of a 1.5 volt bias battery to the ungrounded side of C38.
Connect the positive side to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors.	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp)	193. 25MC 197. 75MC	10	Vert. amp. thru 10KΩ to point Ⓐ . Low side to chassis.	A13	Adjust to place sound marker in trap notch as in Fig. 3. Use high scope gain and increase sweep generator output to view trap region. Video marker should fall at 50% on response curve.
			213MC (10MC Swp)	211. 25MC 215. 75MC	13		A14	
			207MC (10MC Swp)	205. 25MC 209. 75MC	12		A15	
			201MC (10MC Swp)	199. 25MC 203. 75MC	11		A16	
			189MC (10MC Swp)	187. 25MC 191. 75MC	9		A17	
			183MC (10MC Swp)	181. 25MC 185. 75MC	8		A18	
			177MC (10MC Swp)	175. 25MC 179. 75MC	7		A19	
			85MC (10MC Swp)	83. 25MC 87. 75MC	6		A20	
			79MC (10MC Swp)	77. 25MC 81. 75MC	5		A21	
			69MC (10MC Swp)	67. 25MC 71. 75MC	4		A22	
			63MC (10MC Swp)	61. 25MC 65. 75MC	3		A23	
			57MC (10MC Swp)	55. 25MC 59. 75MC	2		A24	

RF AND MIXER ALIGNMENT

Leave the bias battery connected as under "Oscillator Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors.	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp)	193. 25MC 197. 75MC	10	Vert. amp. thru 10KΩ to point Ⓑ . Low side to chassis.	A25, A26, A27	Adjust for response curve similar to Fig. 4 with markers above 90%.
9.	"	"	69MC (10MC Swp)	67. 25MC 71. 75MC	4	"		Check for response curve similar to Fig. 4. If markers fall below 70% on any channel, make slight compromise adjustments of A25, A26 and A27 with channel switch set to that channel. Recheck all other channels to see that they have not been seriously affected.
			213MC (10MC Swp)	211. 25MC 215. 75MC	13			
			207MC (10MC Swp)	205. 25MC 209. 75MC	12			
			201MC (10MC Swp)	199. 25MC 203. 75MC	11			
			189MC (10MC Swp)	187. 25MC 191. 75MC	9			
			183MC (10MC Swp)	181. 25MC 185. 75MC	8			
			177MC (10MC Swp)	175. 25MC 179. 75MC	7			
			85MC (10MC Swp)	83. 25MC 87. 75MC	6			
			79MC (10MC Swp)	77. 25MC 81. 75MC	5			
			63MC (10MC Swp)	61. 25MC 65. 75MC	3			
			57MC (10MC Swp)	55. 25MC 59. 75MC	2			

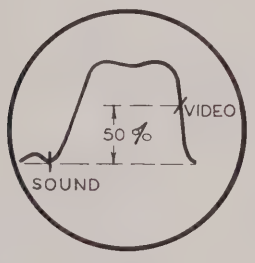


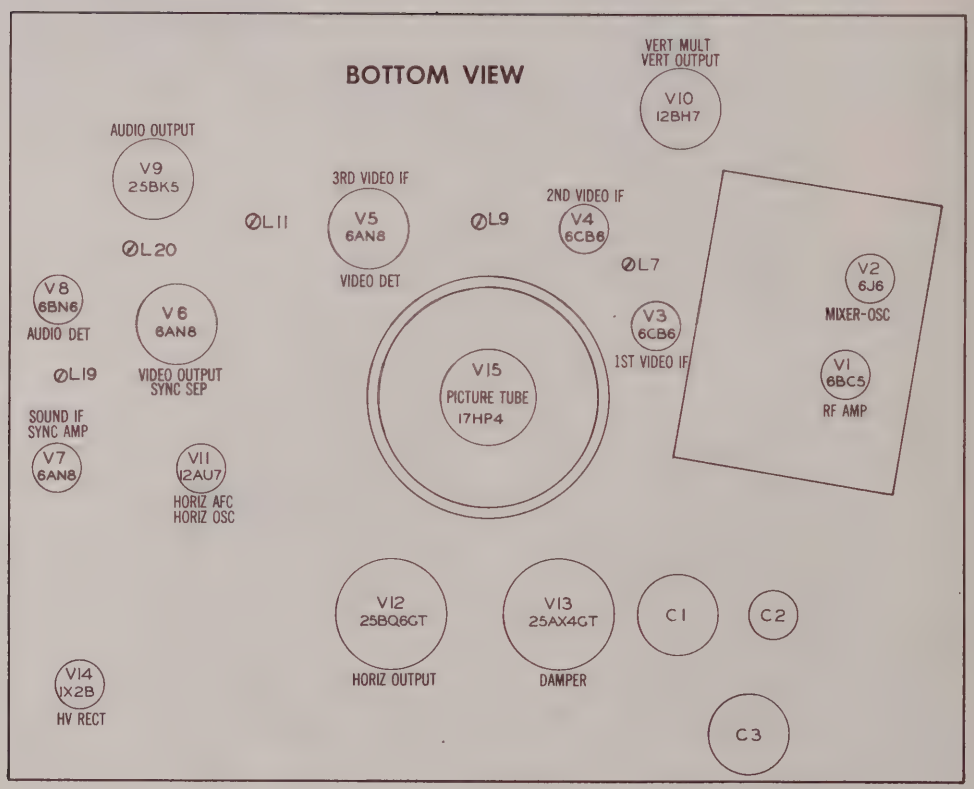
FIG. 3

FIG. 4

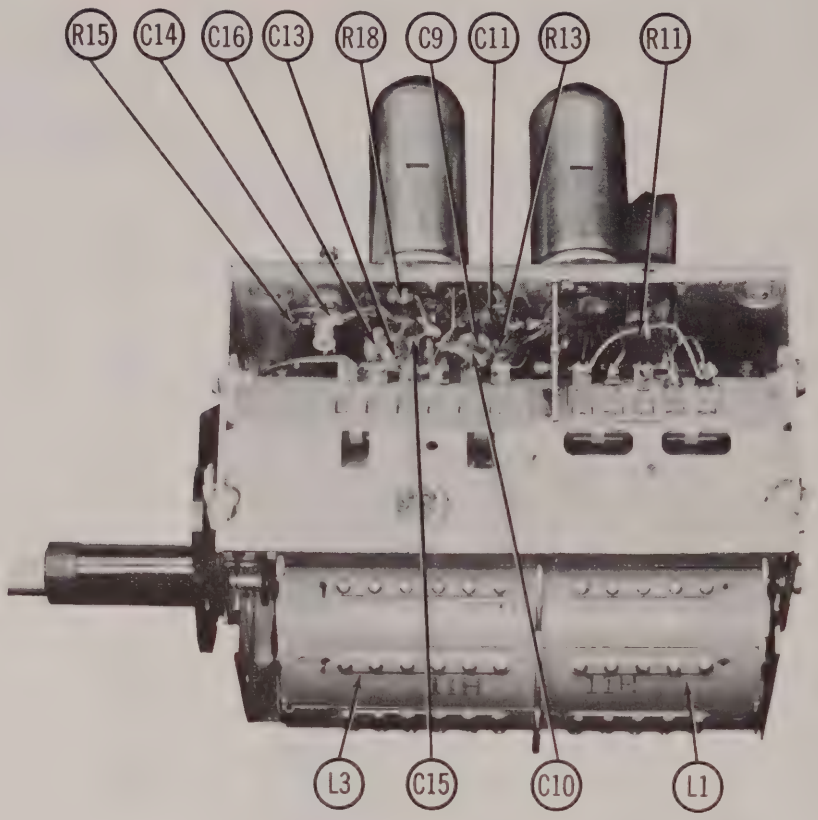
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	1Meg	0Ω	0Ω	.1Ω	†3.5KΩ	†5.5KΩ	0Ω		
V 2	6J6	†17.5KΩ	†17.5KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6CB6	1Meg	47Ω	0Ω	.1Ω	†3.7KΩ	†3.7KΩ	0Ω		
V 4	6CB6	1Meg	62Ω	0Ω	.1Ω	†3.7KΩ	†3.7KΩ	0Ω		
V 5	6AN8	4.7KΩ	4.7KΩ	.2Ω	0Ω	.1Ω	†3.5KΩ	†3.5KΩ	2.3Ω	82Ω
V 6	6AN8	†120KΩ	2.2Meg	0Ω	0Ω	.1Ω	†5.6KΩ	†2.5KΩ	1Meg	300Ω
V 7	6AN8	†8.2KΩ	22KΩ	0Ω	0Ω	.1Ω	†33KΩ	†33KΩ	100KΩ	47Ω
V 8	6BN6	300Ω	.3Ω	0Ω	.1Ω	†18KΩ	5.4Ω	†220KΩ		
V 9	25BK5	†485Ω	INF	120KΩ	■22Ω	■0Ω	150Ω	120KΩ	†37Ω	INF
V 10	12BH7	▲4.5KΩ	2.2Meg	1KΩ	.1Ω	.1Ω	▲4.5Meg	47KΩ	120KΩ	0Ω
V 11	12AU7	†47KΩ	500KΩ	43Ω	0Ω	0Ω	†30KΩ	1.5Meg	400KΩ	.1Ω
V 12	25BQ6GT	INF	■39Ω	INF	†8.2KΩ	470KΩ	INF	■22Ω	0Ω	Top Cap ▲12Ω
V 13	25AX4GT	▲20Ω	INF	1Meg	INF	†37Ω	INF	■39Ω	■50Ω	
V 14	1X2B	PINS	1-8	HAVE	INFINITE	RESISTANCE				Top Cap ▲265Ω
V 15	17HP4	0Ω	22KΩ	Pin 6 †37Ω	Pin 10 ▲1KΩ	Pin 11 †100KΩ	Pin 12 .1Ω			

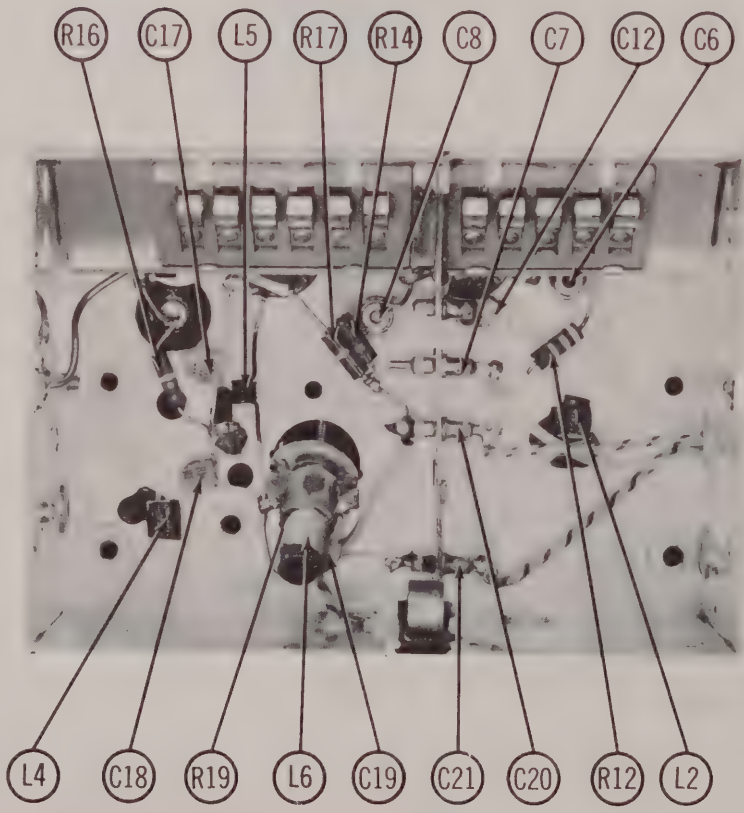
† MEASURED FROM OUTPUT OF M2.
▲ MEASURED FROM PIN 3 OF V13.
■ MEASURED FROM COLD SIDE OF OFF/ON SWITCH.



TUBE PLACEMENT CHART

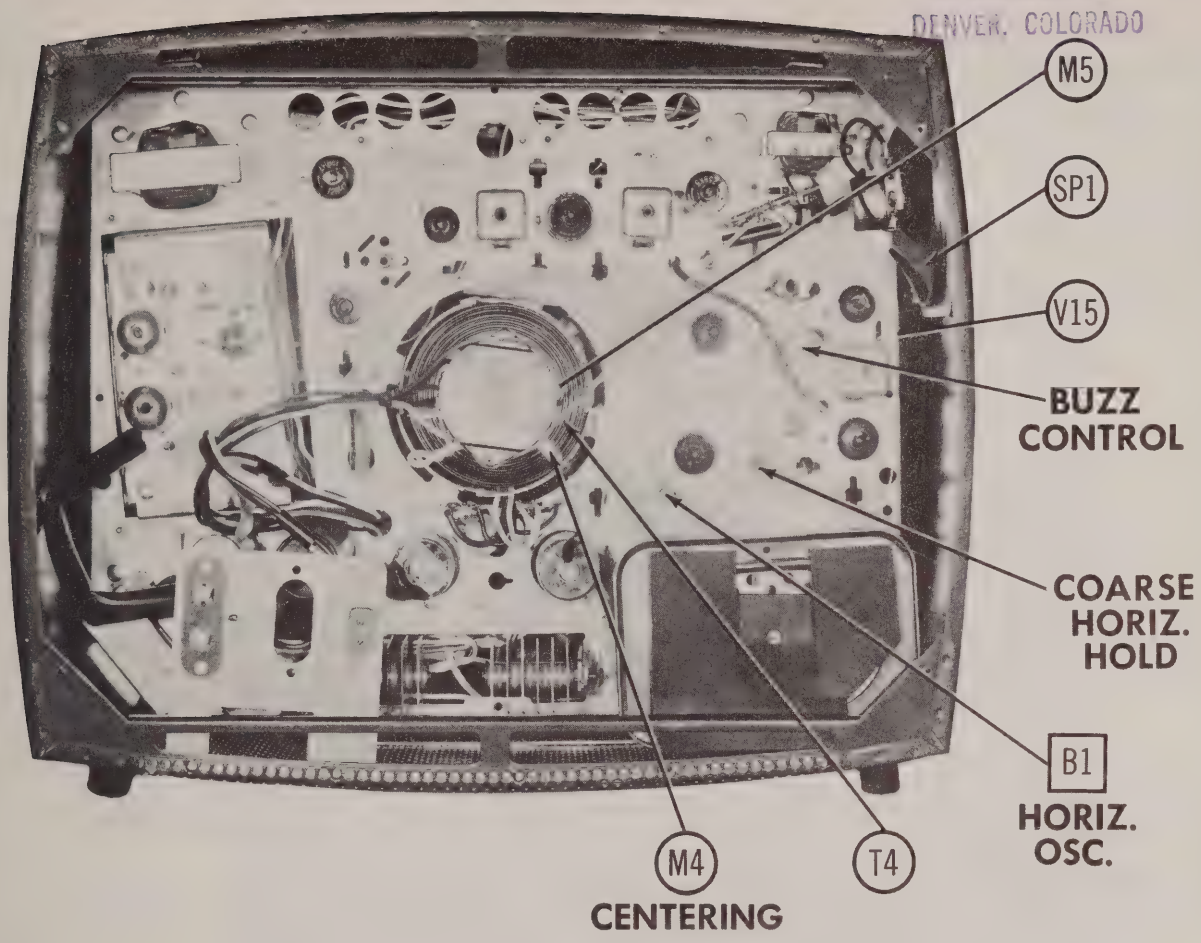


RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

DENVER, COLORADO



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

1. Set the horizontal hold control to its mid-range position and adjust the coarse horizontal hold control (R7A) for a steady picture.

2. Turn the horizontal hold control fully clockwise then fully counter clockwise noting the number of diagonal bars present on the screen. Adjust R7A until an equal number of diagonal bars are present on the screen at the extreme settings of the horizontal hold control. If this condition cannot be obtained proceed with step 3.

3. Turn the horizontal hold control fully counter clockwise. Turn R7A fully clockwise. Turn the horizontal oscillator coil slug (B1) counter clockwise until a squegging condition (breakup of raster) appears. Turn B1 clockwise until squegging stops. Turn B1 an additional two turns in a clockwise direction.

4. Set horizontal hold control and R7A to their mid-range positions and adjust B2 until picture synchronizes horizontally. Recheck holding action as in 1. and 2. above.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V12 and V13. Check M1 and M2. Check T2, T4A, R77, C76 and other associated components.

DRIVE LINES

Check by substitution V12 and V13. Check adjustment B2. Check T2, T4A, C75, C74, R77 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V12 and V13. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V11, V12 and V13. Check C69 for open. Check L21, C73, R70 and other associated components.

XMAS TREE EFFECT

Check by substitution V11, V12 and V13. Check T2 and T4A for internal arcing. Check L21, L22, C73, C72, C71, R71, R73 and other associated components.

VERTICAL

LOSS OF SWEEP

Substitute V10. Check waveform W6.

If Satisfactory	If Unsatisfactory
Check T3, T4B, R63, C3C, and other associated components.	Check C61, C59, R62, R6 and other associated components.

INSUFFICIENT SWEEP

Substitute V10. Check vertical size and vertical linearity controls for proper operation. Check T3 and T4B.

COMPRESSED AT BOTTOM

Substitute V10. Check R6, R62, R59, C59 and other associated components.

COMPRESSED AT TOP

Substitute V10. Check R5, C3D, T3, T4B and other associated components.

FOLDS

Substitute V10. Check C59, C60, R59, R5 and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V6 and V7. Check C53, C54, C55, R52, R55, R54 and other associated components.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Substitute V10. Check C57, C58, R4 and R58. Check vertical integrator network. Check video IF alignment for overloading.

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Substitute V11. Check C65, C68, C71, R70, R1 and other associated components.

HORIZONTAL BENDING

Check by substitution V6, V7 and V11. Check AFC network.

VIDEO

LOSS OF VIDEO

Substitute V6. Check C40, C41, L17, L16, R35 and other components associated with V6.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check video IF alignment.

POOR CONTRAST

Substitute V6. Check picture tube, contrast control, L14, R34 and other associated components.

NEGATIVE PICTURE

Substitute V6. Check video detector network, picture tube, C41 and other associated components.

SMEAR

Substitute V6. Check L17, L13, L12, C41, R35 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V3, V4, V5 and V6 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V7, V8 and V9. Check stage V10 using audio signal generator. Apply audio signal across R3B.

If Satisfactory	If Unsatisfactory
Check audio IF and audio detector stages for component failure or change of value.	Check C50, C52, R45, T5, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustments R8 and A12. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control T1 and R84. Tubes V9, V12 and V13 filaments are connected in series. V9, V12 and V13 will fail to light if anyone of the filaments are open. If filaments light, check M1 and M2. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Check M1, M2, R84 and R83. Check B+ filter and decoupling network.

PROPERTY OF
L. F. BLANKENSHIP
3924 MEDUE ST.
DENVER, COLORADO

CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No	USE	REPLACEMENT DATA: TRUETONE PART No.	STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	RF Amp.	6BC5	6BC5	7BD	
V2	Mixer Osc.	6J8	6J8	7BF	
V3	1st Video IF Amp.	6CB6	6CB6	7CM	
V4	2nd Video IF Amp.	6CB6	6CB6	7CM	
V5	3rd. Video IF Amplifier - Video Detector	6AN8	6AN8	9DA	
V6	Video Output - Sync Sep	6AN8	6AN8	9DA	
V7	Sound IF Amp - Sync Amp.	6AN8	6AN8	9DA	
V8	Audio Det	6BN6	6BN6	7DF	
V9	Audio Output	25BK6	25BK6	8DQ	
V10	Vert Mult - Vert Output	12BH7	12BH7	9A	
V11	Horiz AFC - Horiz Osc.	12AU7	12AU7	9A	
V12	Horiz Output	25BQ6GT	25BQ6GT	8AM	
V13	Damper	25AX4GT	25AX4GT	4CG	
V14	HV Rectifier	1X2B	1X2B	9Y	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: TRUETONE PART No	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V15	17HP4	17HP4	17HP4	17HP4/ 17HP4	17HP4	12L	① Circuit changes necessary.
	21YP4	21YP4	21YP4	21YP4	21YP4	12L	
				21YP4A ①		12L	
				21AFP4 ①		12M	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP.	VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	150	150	8C-23464	AFHSI-70		XA004		JFU17	TVL-3442	
C2	150	150	8C-23463	AFHSI-70		XA004		JFU17	TVL-3442	
C3A	■100	300	8C-23689	AFH3-26		C167		FP389.1	TVA-3574	
B	±10	300		PR8450/20		BR505		TC39	TVA-3711	
C	±25	450								
D	60	50								
C4	470	500	8F3-121	1468-471	D6-471	5WS747	GP2K-471	MC245	1FM-35	
C5	470	500	8F3-121	1468-471	D6-471	5WS747	GP2K-471	MC245	1FM-35	
C6	3-8		31A-270		829-10					
C7	600		13M102202	EF-001	MFT-1000				503C-D1	
C8	.5-3		31A-058-1		829-3		3115-01-0R5	CT505A		
C9	120		13L8D121K	BPD-0001	D8-121	GO44	GP2K-121	UC-5312	5GA-T12	
C10	120		13L8D121K	BPD-0001	D8-121	GO44	GP2K-121	UC-5312	5GA-T12	
C11	1000		13LBT102Z	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C12	680		13M102Z02	EF-001	MFT-1000				503C-D1	
C13	120		13L8D121K	BPD-0001	D8-121	GO44	GP2K-121	UC-5312	5GA-T12	
C14	5-3		31A-058-1		829-3		3115-01-0R5	CT505A		
C15	10		13L8C100A	SI10NT50	TCN-10	N018	N750K-100	NT-541	5TCU-Q1	
C16	5		13L8UA050C	SI5NP0	TC2-4.7	Z010	NP0K-050	ZT-555	5TCCB-V47	
C17	1000		13L8T102Z	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C18	10		13L8C100A	SI10NP0	TCZ-10	Z018	NP0K-100	ZT-541	5TCC-Q1	
C19	120		13L8D121K	BPD-0001	D8-121	GO44	GP2K-121	UC-5312	5GA-T12	
C20	600		13M102Z2	EF-001	MFT-1000				503C-D1	
C21	600		13M102Z2	EF-001	MFT-1000				503C-D1	
C22	1000		8G-13962	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C23	5000		8G-13962	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C24	2000		8G-19522	SI2000	D6-202	TP56	GP2-333-202	UC-522	5HK-D2	
C25	1000		8G-13962	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C26	5000		8G-13962	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C27	5		8G-13961	SI5NP0	TC2-4.7	T207	NP0K-050	ZT-555	5TCCB-V47	
C28	47		8G-19731	SI47NP0	TC2-47	T223	NP0K-470	ZT-544	5TCL-Q47	
C29	1000		8G-13201	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C30	680		8G-13961	SI680	D6-681	TP59	GP2K-681	UC-5388	5GA-T68	
C31	1000		8G-13201	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C32	5000		8G-13962	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C33	5000		8G-13962	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C34	5000		8G-13962	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C35	1000		8G-13962	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C36	5		8G-12166	SI5NP0	TC2-4.7	T207	NP0K-050	ZT-555	5TCCB-V47	
C37	5		8G-12166	SI5NP0	TC2-4.7	T207	NP0K-050	ZT-555	5TCCB-V47	
C38	.22	200	8K-23696	P288-22		CUBD22		PT402	2TM-P22	
C39	.1	200	8K-23694	P288-1	DF-104	CUBD1		PT401	2TM-P1	
C40	51		8G-13798	SI51NT50	TCN-51	TM15	N750L-510		5TCC-Q51	
C41	.1	400	8K-23095	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C42	3.3		8L-23551	SI3.3NP0	TCZ-3.3	T206	NP0K-3R3	ZT-5533	5TCCB-V33	
C43	33		8L-19560	SI33NP0	TCZ-33	T218	NP0K-330	ZT-5433	5TCC-Q33	
C44	10000		8G-20289	BPD-01	DD-103	K082	81L-01	DC-511	5HK-S1	
C45	470	500	8F3-121	1468-471	D6-471	5WS747		MC8245	1FM-35	
C46	10000		8G-20289	BPD-01	DD-103	K082	81L-01	DC-511	5HK-S1	
C47	10000		8G-20289	BPD-01	DD-103	K082	81L-01	DC-511	5HK-S1	
C48	10		8G-13201	SI10NP0	TCZ-10	Z018	NP0K-100	ZT-541	5TCC-Q1	
C49	1000		8G-13201	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C50	.01	400	8G-20289	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C51	.01	400	8K-23091	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C52	.0039	600		P888-004	D8-402	CUB8D4	GP2-333-402	PT824	6TM-D4	Note 1
C53	220		8G-19865	SI220	D6-221	TP39	GP2K-331	UC-5322	5GA-T22	
C54	5000		8G-13962	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C55	.047	200	8K-23093	P288-047	DF-503	CUB2S47		PT4147	2TM-S47	
C56A	.002							PT822	6TM-D2	
B	.005		●17A-23378	●PA-110	●PC-100	●1S7TM1	●1405-01	PT825	6TM-D5	
C	.005							PT825	6TM-D5	
C57	2000		8G-19523	SI2000	D6-202	TP56	GP2-333-202	UC-522	5HK-D2	
C58	.1	200	8K-23084	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C59	.033	400	8K-23218	P488-033		PM6S33		PT4133		

PARTS LIST AND DESCRIPTIONS

CAPACITORS (cont)

ITEM No	RATING: CAP.	VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C60	.1	200	8K-23094	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C61	.1	400	8K-23095	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C62	1000	2000	8G-13781	HVD30-001	DD30-402		5KY-101		30GA-D1	
C63	.022	400	8K-23092	P488-022	DF-303	CUB4S22	817-02	PT4122	4TM-S22	
C64	.022	200	8K-23082	P288-022	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C65	82	500	8F3-112	1469-820		22R5Q82				
C66	82	500	8F3-112	1469-820		22R5Q82				
C67	220	500	8F3-117	1469-221		22R5T22		MC8246		
C68	.047	200	8K-23083	P288-047	DF-503	CUB2S47		PT4147	2TM-S47	
C69	.022	200	8K-23082	P288-022	DF-203	CUB4S22	817-02	PT4122	4TM-S22	
C70	.47	200	8K-23087	P288-47		CUB2P47		PT4047	2TM-P47	
C71	.047	400	8K-23094	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C72	330	500	8F3-119	1469-331		22R5T33				
C73	.0068	600	8M-24087							
C74	470		8D-23779	BPD-00047	D6-471	K060	801-471	UC-5347	5GA-T47	
C75	.001	600	8K-23099	P688-001	D8-102	CUB6D1	GP2L-102	PT821	6TM-D1	
C76	.047	400	8K-23094	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C77A	5000		8G-23790	BPD-3X0047	DD8-502	DK079	81L-005	DC-525	5HK-D547	
B	5000						82L-005	DC-525		
C78	.1	600	8K-23095	P688-1		CUB4P1		PT801	6TM-P1	
C79	.15	200	8K-23085	P288-15		CUB2P15		PT4015	2TM-P15	
C80	220	3000	8G-23853	HVD30-00022	DD30-231		5KY-231		30GA-T22	
C81	47	3000	8G-24028	HVD30-000047	DD30-470		5KY-470		30GA-Q47	Note 3
C82	47	2000	8G-23545	HVD30-000047	DD30-470		5KY-470	MCL-647	30GA-Q47	
C83	5000		8G-13962	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C84	30		16B-23772							

Note 1. Some versions use .01MFD in this application (part #8K-23093).
Note 2. Not used in all versions.
● Items C56A, C56B, C56C, R56A, R56B, R56C are combined in one unit.

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	50KΩ	½	B-10B-23694	Q11-123	A47-50K-S	AB-51	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
R2A	500KΩ	½	B-10B-23695	Q11-133	A47-500K-S	AB-56	U-50	Brightness
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	1000Ω	½	D10A 23714		RTV-496	F1-4	UF13L	Contrast Panel
B	Misc				R2-53	AK-4	UB6A	Volume-Sense
C	Switch				Not Req.	KB-1	UB-26	Attach to R3B
R4A	100KΩ	½	B-10B-23693	Q11-128	A47-100K-S	AB-60	U-41	Vert. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R4A
R5A	6000Ω	½	B-10B-23607	Q11-114	A47-5000-S	AB-10	SU-14	Vert. Linearity - Note 1
	with 1000Ω stop.							
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R5A
R6A	3Meg	½	B-10B-23696	Q11-140	A47-3Meg S	AB-84	SU-59	Vert. size
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7A	250KΩ	½	B-10B-23856	Q11-130	A47-250K-S	AB-50	SU-46	Centre Horiz. Hold
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Not Req.	Attach to R7A
R8	750Ω	1	A-10D-23857		39-750			Buzz Wire Wound

Note 1. Connect a 1000Ω resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control inserted viewed from shaft end, terminals down).
† Universal replacement (Mallory exact duplicate part no. UE-858).

RESISTORS

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	NOTES
R9	220KΩ	½	9B1-27	BTS-220K	
R10	220KΩ	½	9B1-27	BTS-220K	
R11	15KΩ	½		BTS-15K	
R12	47KΩ	½		BTS 47K	
R13	2200Ω	½		BTS-2200	
R14	1000Ω	½		BTS-1000	
R15	4700Ω	½		BTS-4700	
R16	220KΩ	½		BTS-220K	
R17	15KΩ	½		BTS-15K	
R18	10KΩ	½		BTS-10K	
R19	18KΩ	½		BTS-18K	
R20	12KΩ	½	9B1-75	BTS-12K	
R21	1000Ω	½	9B1-83	BTS-1000	
R22	47Ω	½	9B1-46	BTS-47	
R23	1000Ω	½	9B1-82	BTS-1000	
R24	16KΩ	½	9B1-77	BTS-16K	
R25	1000Ω	½	9B1-82	BTS-1000	
R26	620 5%	½	9B1-130	BTS-62 5%	
R27	100Ω	½	9B1-62	BTS-100	
R28	82Ω	½	9B1-49	BTS-82	
R29	33KΩ	½	9B1-80	BTS-33K	
R30	1000Ω	½	9B1-82	BTS-1000	
R31	1Meg	½	9B1-98	BTS-1Meg	
R32	4700Ω	2		BTS-4700	
R33	1Meg	½	9B1-98	BTS-1Meg	
R34	47Ω	2	9B1-46	BTS-47	
R35	1800Ω	2	9B4-71		
R36	100KΩ	½	9B1-86	BTS-100K	
R37	22KΩ	½	9B1-78	BTS-22K	
R38	1000Ω	½	9B1-82	BTS-1000	
R39	100KΩ	½	9B1-86	BTS-100K	
R40	33KΩ	½	9B2-80	BTA-33K	
R41	18KΩ	2	9B4-77	BTB-18K	
R42	680Ω	½	9B1-80	BTS-680	
R43	220KΩ	½	9B1-90	BTS-220K	
R44	330KΩ	½	9B1-92	BTS-330K	
R45	150Ω	½	9B2-52	BTA-150	
R46	470KΩ	½	9B4-23	BTS-470K	

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	NOTES
R47	10KΩ	½	9B1-74	BTS-10K	
R48	470KΩ	½	9B1-94	BTS-470K	
R49	2.2Meg	½	9B1-102	BTS-2 2Meg	
R50	220K	2		BTB-220K	
R51	1Meg	½	9B1 98	BTS-1Meg	
R52	560KΩ	½	9B1-95	BTS-560K	
R53	100KΩ	½	9B1-86	BTS-100K	
R54	4700Ω	1	9B1-86	BTA-4700	
R55	100Ω	½	9B1-62	BTS-100	
R56A	22KΩ			BTS-22K	
B	8200Ω		●17A-23376	BTS-8200	
C	8200Ω			BTS-8200	
R57	47KΩ	2		BTB-47K	
R58	82KΩ	½	9B1-85	BTS-82K	
R59	4700Ω	½	9B1-70	BTA-4700	
R60	2.2Meg	½	9B1-102	BTS-2 2Meg	
R61	100KΩ	½	9B1-86	BTS-100K	
R62	3.3Meg	½	9B1-102	BTS-3.3Meg	Note 4
R63	3300Ω	½	9C13-1105		
R64	100KΩ	½	9B1-86	BTS 100K	
R65	150KΩ	½	9B1-88	BTS-150K	
R66	82KΩ	½	9B1 85	BTS-82K	
R67	820KΩ	½	9B1-97	BTS-820K	
R68	330KΩ	½	9B1-92	BTS-330K	
R69	2500Ω	½	9B1-89	BTS-2500	
R70	100KΩ	½	9B1-86	BTS-100K	
R71	30KΩ	1		BTS-30K	Note 1
R72	150KΩ	2		BTA-150K	
R73	8200Ω	½	9B1-73	BTS-8200	
R74	47KΩ	2	9B1-83	BTB-47K	
R75	470KΩ	½	9B1-94	BTS-470K	
R76	100Ω	½	9B1-50	BTS-100	
R77	820KΩ	2	9B4-73	BTB-820K	
R78	1.5Ω	½	9C1-1005		
R79	1000Ω	10		PW10-1000	Note 2
R80	1500Ω	10		PW10-1500	Note 3
R81	27000	3	9C11-1104		
R83	220KΩ	½	9B1-27	BTS-220K	

RESISTORS (cont)

ITEM No	RATING: OHMS	WATT	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	NOTES
R83	90	5	46M-23018		
R84	133Ω	15	9C-23872		
R85	560Ω	½	9B1-59	BTS-560	

ITEM No	RATING: OHMS	WATT	REPLACEMENT DATA: TRUETONE PART No.	IRC PART No.	NOTES
R86	560Ω	½	9B1-59	BTS-560	
R87	47Ω	½			Note 2

● Items R56A, R56B, R56C, C56A, C56B and C56C are combined in one unit.
Note 1 Some models may use a 33KΩ resistor in this application.
Note 2. Not used in all versions
Note 3.Some versions may use a 2500Ω resistor in this application.
Note 4. Some versions may use a 2.2meg resistor in this application.

TRANSFORMER (FILAMENT)

ITEM No	RATING: PRI	SEC 1	SEC 2	REPLACEMENT DATA: TRUETONE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Hallderson PART No.	Thordarson PART No.
T1	UTVAC ①-29A	12.6VCT ②-4.4A		12D23698	P-8130					

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: TRUETONE PART No.	Hallderson PART No.	Merit PART No.	RCA PART No.	Rom PART No.	Stancor TYPE No.	Thordarson PART No.	Triad PART No.
T2	Horiz. Output Trans.	12E-23939							
T3	Vert. Output Trans.	12E-23726	Z1804	A-3037	222TI	V313	A-8133	28S52	A-102X
T4A	Yoke-Horiz. (PMH Vert. (42MH)	20-23744①	DF90H ②③	MDF-70 ②③	206DU ②③	T70F08 ②	DY-8A ②③	T-5 ②③	T-12 ②③
B									

① Includes deflection yoke part no. 13M-23755, C82, R85 and R86.
② Use original yoke cover and positioning device.
③ Use original horizontal yoke network.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	TRUETONE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Hallderson PART No.	Thordarson PART No.	NOTES
T5	6.4KΩ	3.5Ω	12C-23704	A-3678	A-3026	S-7X	Z1113	22S46	1 Drill one new mounting hole.

SPEAKER

ITEM No	RATINGS: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: TRUETONE PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3.5Ω	18A25735 ①	436	4A07	① Used in models 2D2423A & 2D2424A.
	4"	PM	3.5Ω	18A21483 ②	436	4A07	② 2 speakers used in model 2D2424B
	4"	PM	3.5Ω	18A21216 ③	526	5A1	③ Used in model 2D2425A
	5"	PM	3.5Ω	18A24140 ④	526	5A1	④ 2 speakers used in model 2D2426A.

COILS (RF-IF)

ITEM No	USE	DC RES.: PRI.	SEC.	REPLACEMENT DATA: TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1A	Ant. Coil	0Ω CT	0Ω	31M-112-2B				Channel 2
B	Ant. Coil	0Ω CT	0Ω	31M-112-3B				Channel 3
C	Ant. Coil	0Ω CT	0Ω	31M-112-4B				Channel 4
D	Ant. Coil	0Ω CT	0Ω	31M-112-5B				Channel 5
E	Ant. Coil	0Ω CT	0Ω	31M-112-6B				Channel 6
F	Ant. Coil	0Ω CT	0Ω	31M-112-7B				Channel 7
G	Ant. Coil	0Ω CT	0Ω	31M-112-8B				Channel 8
H	Ant. Coil	0Ω CT	0Ω	31M-112-9B				Channel 9
I	Ant. Coil	0Ω CT	0Ω	31M-112-10B				Channel 10
J	Ant. Coil	0Ω CT	0Ω	31M-112-11B				Channel 11
K	Ant. Coil	0Ω CT	0Ω	31M-112-12B				Channel 12
L	Ant. Coil	0Ω CT	0Ω	31M-112-13B				Channel 13
L2	Fil. Choke	0Ω		94A-546				
L3A	RF, Mixer Grid, Osc. Coil		0Ω	31M-112-2B				Channel 2
B	RF, Mixer Grid, Osc. Coil		0Ω	31M-112-3B				Channel 3
C	RF, Mixer Grid, Osc. Coil		0Ω	31M-112-4B				Channel 4
D	RF, Mixer Grid, Osc. Coil		0Ω	31M-112-5B				Channel 5
E	RF, Mixer Grid, Osc. Coil		0Ω	31M-112-6B				Channel 6
F	RF, Mixer Grid, Osc. Coil		0Ω	31M-112-7B				Channel 7
G	RF, Mixer Grid, Osc. Coil		0Ω	31M-112-8B				Channel 8
H	RF, Mixer Grid, Osc. Coil		0Ω	31M-112-9B				Channel 9
I	RF, Mixer Grid, Osc. Coil		0Ω	31M-112-10B				Channel 10
J	RF, Mixer Grid, Osc. Coil		0Ω	31M-112-11B				Channel 11
K	RF, Mixer Grid, Osc. Coil		0Ω	31M-112-12B				Channel 12

(CONT'D ON NEXT PAGE)

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L	RF, Mixer Grid, Osc. Coil	0Ω		31M-112-13H				Channel 13
L4	Fil. Choke	0Ω		34A-575				
L5	RF Choke	0Ω		31B-638-1				
L6	1st. Video IF	.9Ω		31B-257-8				
L7	2nd. Video IF	.1Ω		201-23829	17-1004 *	TV-103 ■	6189 ■	
L8	RF Choke	1.8Ω		16A-18676				2.2 Microhenries, IRC part #CLA
L9	3rd. Video IF			201-24043				Includes 27KΩ resistor, 510Ω resistor, 47MMF and 470MMF Cap.
L10	Shunt Peaking Coil	2.3Ω		201-20265	19-3036	TV-180	6176	38 Microhenries
L11	4th. Video IF	.2Ω	.2Ω	13B-23887	17-4524			
L12	Series Peaking Coil	3.4Ω		16A-22923	19-6022		6152	25 Microhenries
L13	Series Peaking Coil	3.4Ω		16A-22923	19-6022		6152	25 Microhenries
L14	Shunt Peaking Coil	23Ω		16A-19365	19-3500	TV-188	4648	470 Microhenries
L15	4.5MC Trap	1.8Ω	2.9Ω	201-23729				Includes a 51MMF, 3.3MMF and 33MMF Caps.
L16	Series Peaking Coil	8Ω		16A-21391	19-3300		6155	305 Microhenries
L17	Series Peaking Coil	7Ω		16A-20970	19-3250	TV-185	6181	270 Microhenries
L18	Series Peaking Coil	2.6Ω		16A-24090	19-1005		4612	11 Microhenries
L19	Sound IF	.3Ω	.3Ω	201-23873				
L20	Quadrature Coil	5.4Ω		201-23727	17-3400		1469	
L21	Ringing Coil	43Ω		13M-24085	19-1575 ▲		6314	
L22	Horiz. Osc.	63Ω		13M-24086				tapped @ 13Ω
L23	RF Choke	1.4Ω		16A-21701	19-1005		4612	8 Microhenries

* Parallel with 5MMF Capacitor.
■ Parallel with 5MMF capacitor and enlarge mounting hole.
▲ Change capacitor across coil to .01MFD.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA TRUETONE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L24	.220A	37.4Ω	.5 Hy.	16A-23889					

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA TRUETONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	SARKES TARZIAN PART No.	SELETRON PART No.	NOTES
M1	.250A	21J23840	1236A	RS300	6S300	300	6Q4	
M2	.250A	21J23840	1236A	RS300	6S300	300	6Q4	

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	Tuner	21J-23684	VHF
M4	Centering device	16M-23770	Includes yoke cover
M5	Ion trap	16M-19705	17" Picture Tube - Chassis 17T18
	Ion trap	16M-19706	21" Picture Tube - Chassis 21T19
B2	Trimmer Cap.	8E-18511	Horiz. Drive - (80-480MMF)
	Cabinet	200-24147	Model 2D 2424B
	Cabinet	200-23920-8	Model 2D 2423A
	Cabinet	200-23920-9	Model 2D 2424A
	Cabinet	200-24154	Model 2D 2426A
	Cabinet	200-23921-8	Model 2D 2425A
	Knob	5G-23788-A93	Channel Selector
	Knob	5B-23789-A93	Fine Tuning
	Knob	5B-23787-A93	Contrast
	Knob	5B-23786-A93	On/Off Volume
	Knob	5B-23805-A93	Control (3 used)
	Disk	5M-23792-A93	Channel Indicator
	Disk	5M-23794-A93	Control Indicator
	Safety Glass	30M-18773	17" Picture Tube
	Safety Glass	30M-23709	21" Picture Tube

TROUBLE SHOOTING AIDS (cont)

3924 MEADE ST.
DENVER, COLORADO

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V11, V12, V13 and V14. Check waveform W11.

If Satisfactory	If Unsatisfactory
Check T2, T4A, C80, C79, C81, C78, C76, R77 and other associated components.	Check L21, L22, C73, C72, R71, R73, R74 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V12, V13 and V14. Check M1 and M2. Check C75, C74, R77 and other associated components.

BLOOMING

Check by substitution V12, V13 and V14. Check M1 and M2. Check R78, C78, C80, C75 and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5 and V6. Check video IF components for failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

KEYSTONE EFFECT

Check T4 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge, and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENT

Touch-up adjustment of the VHF tuner oscillator circuit may be accomplished by removal of Channel Selector and fine tuning knobs. Remove 2 screws from escutcheon ring, remove ring . The adjustments are accessible one at a time through the small hole in the cabinet to the right of the channel selector shaft. Also, the vertical size and vertical linearity adjustments are accessible when the escutcheon ring is removed.

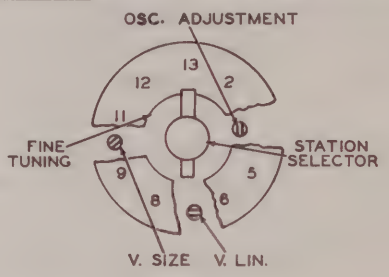
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove chassis. Remove 4 bolts from supporting brackets. Remove safety glass and frame.

PICTURE TUBE REMOVAL

For picture tube removal, remove chassis, safety glass and frame, tube socket, ion trap, H. V. lead. Remove picture tube.

SERVICE ADJUSTMENT LOCATION (ALSO SEE TUBE PLACEMENT CHART ON PAGE 5)



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the Horiz. Oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on rear of chassis.Set the Horiz. Hold Control at the center of its range and adjust the coarse Horiz. Hold Control until picture synchronizes horizontally. (For location see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

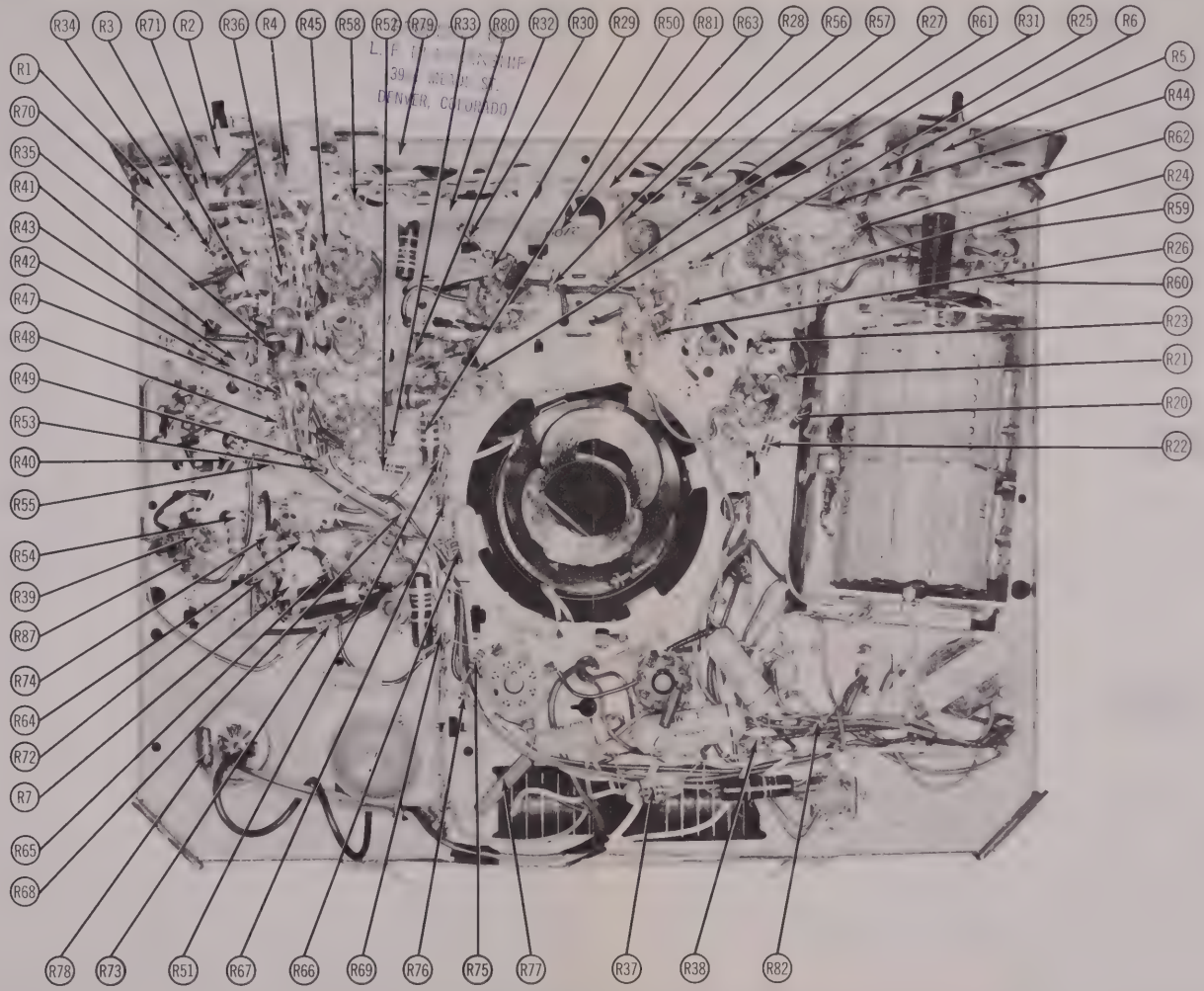
To eliminate sound IF detector buzz, adjust the buzz control located on rear of the chassis for maximum volume and minimum buzz. If results are unsatisfactory, see align instructions on pages 6 and 7.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

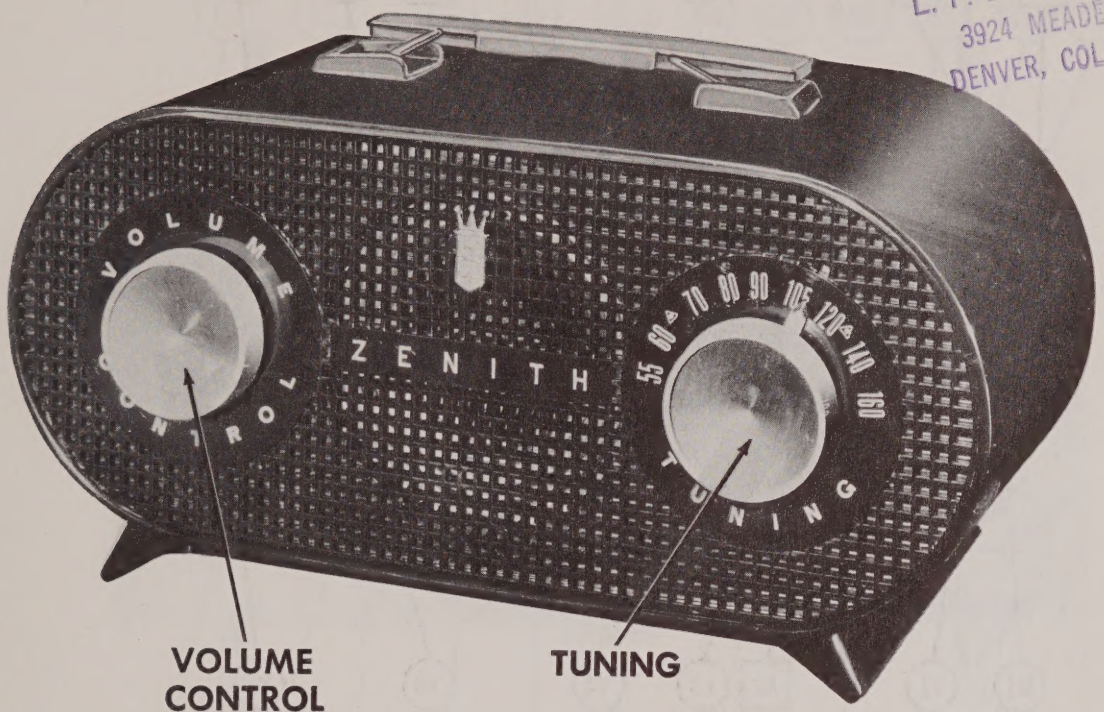
1. Remove 7 push-on type control knobs from top of cabinet.
2. Remove 5 metal screws from under side of cabinet.
3. Remove 4 metal screws. Remove rear cover.
4. Disconnect speaker leads
5. Remove 5 metal screws located on the sides and top of safety glass frame.
   Remove 2 metal screws located under top control knobs.
6. Slide picture tube and chassis from front of cabinet.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ZENITH MODELS
M510G, R, W, Y (Ch. 5M02)



ZENITH MODELS
M510G, R, W, Y (Ch. 5M02)

TRADE NAME	Zenith Models M510G, R, W, Y (Ch. 5M02)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	.25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535KC-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5MFD	High side to grid (pin 7) of converter (V1). Low side to B-.	455KC (400~Mod)	600KC	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune for maximum signal	"	A6	"

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

ZENITH
MODEL M510G (Ch. 5M02)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		ZENITH PART No.	STANDARD REPLACEMENT		
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	60	150	22-2537	PRS150/50-30		BBRT44215		TCD497	TVA-2450	Red
B	20	150								Green
C2	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	110		22-5	SI110	D6-111	G043	GP1K-111	UC-5311	5GA-T11	
C4	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C5	470		22-6	BPD-00047	DD-471	K060	801-00047	UC-5347	5GA-T47	
C6	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C7	.02	400	22-1379	P488-02		CUB4S2		PT412	4TM-S2	
C8	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C9	.05	200	22-829	P288-05	DF-503	PJ2S5		PT415	2TM-S5	

CONTROLS

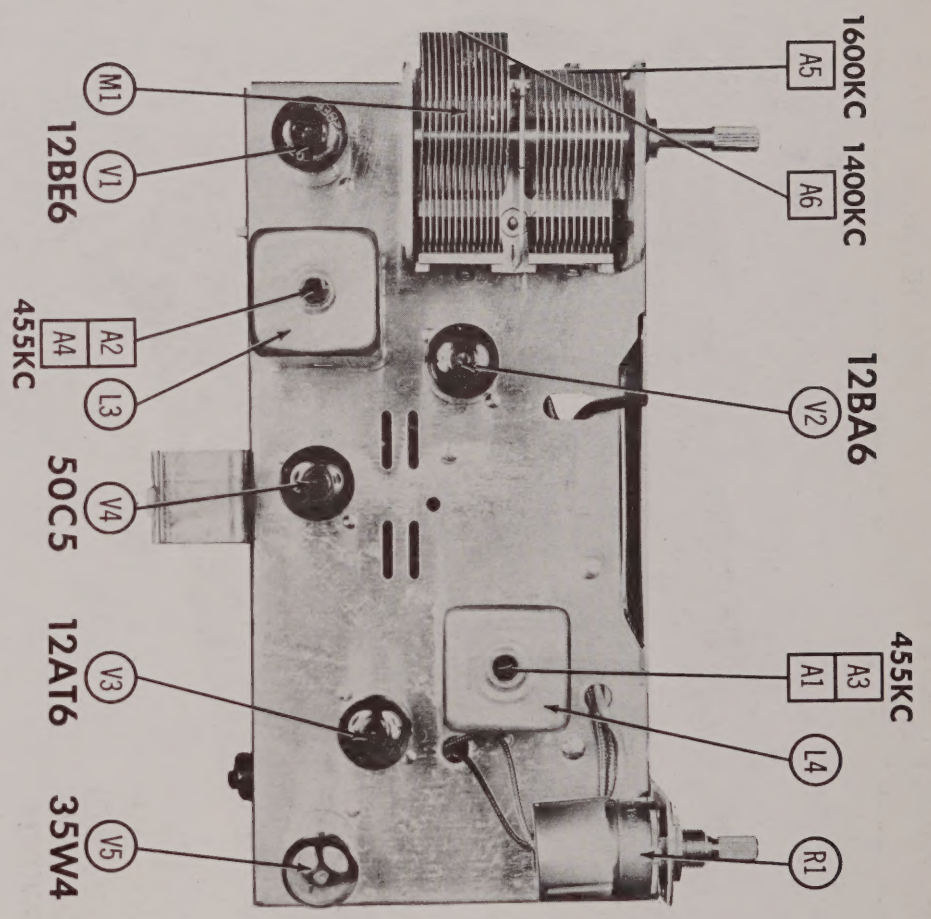
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	63-3198	Q13-137	A47-1Meg-Z	AB-697	U-53	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	KB-1	US-26	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R2	22KΩ	½	63-1842	BTS-22K	
R3	68Ω	½	63-1737	BTS-68	
R4	2.2Meg	½	63-1926	BTS-2.2Meg	
R5	4.7Meg	½	63-1940	BTS-4.7Meg	
R6	470KΩ	½	63-1898	BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R7	470KΩ	½	63-1898	BTS-470K	
R8	150Ω	½	63-1750	BTS-150	
R9	1000Ω	1	63-1574	BTA-1000	
R10	22Ω	1	63-3197		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ZENITH PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.3KΩ	3.5Ω	95-1380	A-3332	A-3025	S-12X	Z1101	24S50 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.5Ω	49-749	ST-113 Mod. P4-X	4A07	

COILS (RF-IF)

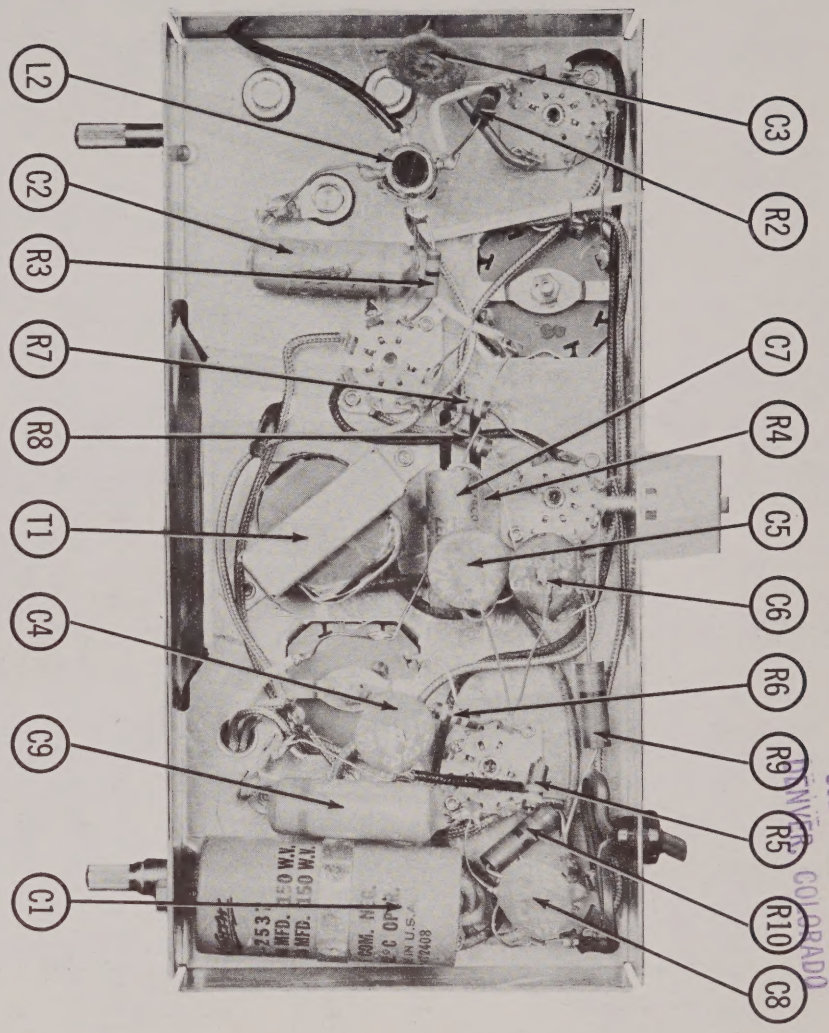
ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	2Ω		S-20917				Includes cabinet back
L2	Osc. Coil	.4Ω	5Ω	S-18616	14-1074 *	BC-381 *	70-Osc.*	
L3	Input IF	16Ω	16Ω	95-1101	16-6758 ■	BC-368	012-C1	
L4	Output IF	16Ω	16Ω	95-1102	16-6770 ■	BC-355 ■	12-C6 ■	

* Drill mounting hole.
■ Use adaptor plate and cut out center spade bolt mounting support.

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M1	Tuning Cap.	22-2538	30-477MMF, 27-173MMF
	Cabinet	14-1642	Plastic - Model M510R
	Cabinet	14-1643	Plastic - Model M510Y
	Cabinet	14-1644	Plastic - Model M510G
	Cabinet	14-1646	Plastic - Model M510W
	Handle	36-81	Model M510R
	Handle	36-82	Model M510Y
	Handle	36-83	Model M510G
	Handle	36-84	Model M510W
	Knob	46-1252	Volume-on-off Model M510R
	Knob	46-1253	Volume-on-off Model M510Y
	Knob	46-1254	Volume-on-off Model M510G
	Knob	46-1255	Volume-on-off Model M510W
	Knob	46-1257	Tuning - Model M510R
	Knob	46-1258	Tuning - Model M510Y
	Knob	46-1259	Tuning - Model M510G
	Knob	46-1260	Tuning - Model 510W
	Pointer	59-301	

CHASSIS—BOTTOM VIEW



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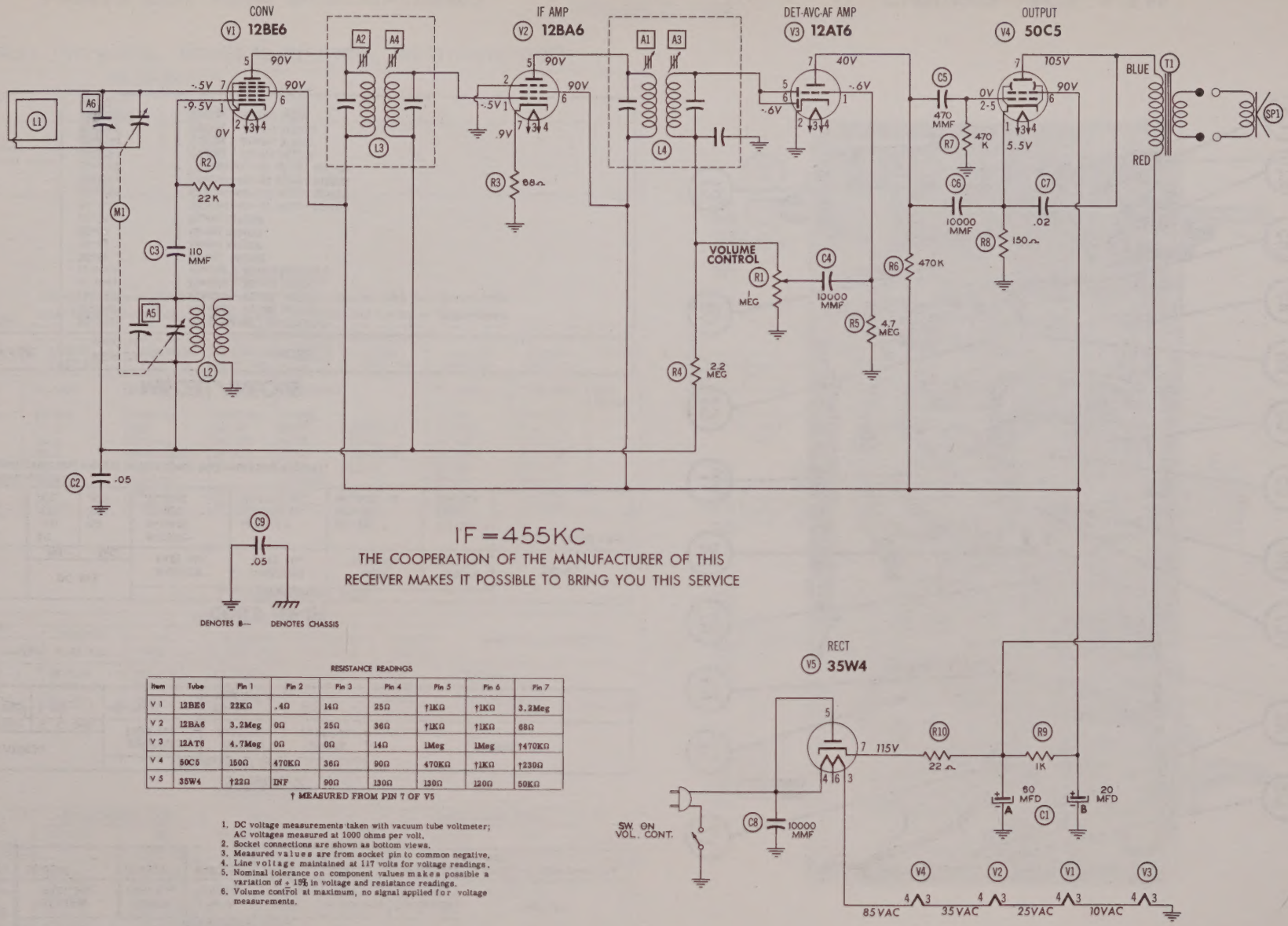
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ZENITH MODEL M510G (Ch. 5M02)



IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.4Ω	14Ω	25Ω	†1KΩ	†1KΩ	3.2Meg
V 2	12BA6	3.2Meg	0Ω	25Ω	36Ω	†1KΩ	†1KΩ	68Ω
V 3	12AT6	4.7Meg	0Ω	0Ω	14Ω	1Meg	1Meg	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	90Ω	470KΩ	†1KΩ	†230Ω
V 5	35W4	†22Ω	INF	90Ω	130Ω	130Ω	120Ω	50KΩ

† MEASURED FROM PIN 7 OF V5

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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